Review of Educational Research

VOL. XXVI, NO. 2 APRIL 1956

INSTRUCTIONAL MATERIALS

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

A Department of the
NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES
1201 Sixteenth St., N.W., Washington 6, D. C.

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Active and associate members of the Association pay dues of $8 annually. Of this amount $5 is for subscription to the REVIEW. The REVIEW is published in February, April, June, October, and December. Beginning with the February 1949 issue single copies are priced at $1.50.

Entered as second-class matter April 10, 1931, at the post office at Washington, D. C. under the Act of August 24, 1912.

REVIEW OF EDUCATIONAL RESEARCH

Official Publication of the American Educational Research Association.
Contents are listed in the Education Index.

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INTRODUCTION

THIS is the first issue of the REVIEW devoted entirely to instructional materials. It deals with resources used by classroom teachers from kindergarten thru college. Research about equipment and apparatus used in areas, such as art, music, science, and physical education, is presented in other issues.

As is true of all publications in this series, the major purpose of this issue is to synthesize and interpret recent developments. Because this is the first compilation of research on instructional resources, the usual three-year period of coverage has been extended to 10, thus coinciding roughly with the surge of interest in instructional materials which began during World War II and has continued since. In addition, significant historical antecedents, including key studies made prior to World War II, have been presented in each chapter.

An attempt has been made to provide some uniformity in the presentation of the Committee's findings. Generally speaking, the research on each type of instructional resource has been organized in terms of: (a) criteria for identification and selection, (b) characteristics of content and form, (c) use or effectiveness in teaching, and (d) organization and administration of the resource. Altho the emphasis varies from chapter to chapter, depending upon the data available in the respective areas, these threads running thruout the issue bring to light certain generalizations about materials used in teaching.

The most obvious, certainly, is that a great expansion has taken place in the field of instructional resources. The fact that separate and quite substantial chapters were required to deal adequately with community resources and free and inexpensive materials, as well as resource centers, is an indication of the scope with which educators presently view materials of instruction. This broadening of horizons has caused educators to re-examine the question of just what constitutes instructional resources. The search is particularly well documented in the chapter on community resources and the one on free and inexpensive materials where the problem is most germane. To paraphrase a section of the former chapter, the profession is moving to the position that what makes an instructional resource is the teacher's use of it, and that resources are human, natural, and institutional in character. Acceptance of this point of view should stimulate further thinking about the use and effectiveness of pupils and adults as resources, both of whom are increasingly being called upon to participate in teaching-learning situations.

A second common note in this issue pertains to the *use* of instructional resources. Whether the discussion centers on teaching aids in textbooks, audio-visual facilities, commercially prepared materials, or out-of-school resources, it appears that greater improvement has taken place with respect to the materials themselves than in their use. Without exception, each

chapter stresses the need for improved teacher education in the use of materials both at the preservice and inservice levels. Instead of simply finding out *what* is being used, the implication is that research should concentrate on *how* materials can be used most effectively. Some of the rigorously controlled experimentation reported in the field of audio-visual materials may well point the way to better answers.

The central role of communication is a third strand running thruout this issue. This is evident in such topics as difficulty level and semantic nuances in textbooks, the influence of audience characteristics on the effectiveness of audio-visual materials, and the acceptance of what community resource persons have to say. These are essentially questions about the communication process. Such considerations break down the notion of materials as ends in themselves and stress their function as means. Materials, then, are seen in a larger and more dynamic context involving a situation or purposes, mediums and technics for communicating ideas and feelings, and the perception or acceptance of what is being communicated on the part of the learner.

This survey has also underscored a fourth point: the importance of providing the *right* materials in the *right* hands at the *right* time. The challenge raises a host of problems regarding such things as free textbooks, statewide adoptions, selection policies for commercially sponsored materials, centralized versus decentralized audio-visual bureaus, personnel, budgets, and insurance. Another series of problems, discussed most fully in Chapter V, related to the desirability of integrating and coordinating the manifold services now being performed by various resource centers. In growing up, the materials field has become complex. It would seem that facilitating arrangements can no longer be dealt with haphazardly or without reference to the total resource problem.

To conclude, the Committee has found uneven progress regarding the relationship of materials to educational purposes, the validity of content, technical standards of presentation, and teachability. There are few definitive studies and many frontiers to be explored.

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CHAPTER I

Printed Materials

HENRY J. OTTO and FRANCES FLOURNOY

PRINTED materials, especially in the form of textbooks, continue to be the core of instructional materials in schools in this country. Except for *The New England Primer,* written by Benjamin Harris and published in Boston sometime between 1687 and 1690, textbooks that were written and published in America did not appear until after 1776. Noah Webster's *American Spelling Book,* called the blue-backed speller, was published in 1783. Since textbooks play such an important role in schooling, authors, publishers, and users have always been concerned about nearly every aspect of the quality of such an important learning and teaching tool; but it was not until the beginning of the twentieth century that major individual and group attention was focused upon the textbook problem. Questions about the selection of textbooks were treated by Maxwell (51) in 1921, by Franzen and Knight (21) in 1922, by Jensen (28) in 1931, and by Clement (9) in 1942. The broader problems of textbook content, format, size and style of type, and the like were discussed by Cubberley (11) in 1927 and by the National Society for the Study of Education (55) in 1931. Problems pertaining to the role of free textbooks and their administration in city school systems were studied by Howard (27) in 1924 and by Lange (34) in 1940. In 1955 Cronbach and others (10) published a deliberative volume dealing with the place and purpose of text materials as well as problems of text production and use.

Analysis of Textbook Content

Samford (65) examined 50 elementary-school and 50 secondary-school social studies texts to determine whether their content conformed with commonly stated objectives as found in state and city courses of study and in journal articles dealing with objectives for the social studies. He found that in the elementary-school texts contemporary affairs, vocabulary building, and tolerance for all mankind were emphasized while personality development and community projects were slighted. Secondary-school texts stressed current social, economic, and political topics and character and citizenship values while slighting conservation and consumer education. Engle (18) found eight fairly common features in his examination of the forewords of 13 high-school textbooks in psychology, but these books varied greatly in the content used to achieve similar objectives; problems of personality and mental hygiene were highlighted in all the texts, but relatively little space was given to the topic of intelligence and its measurement. College texts commonly used in basic courses in elementary education were analyzed by Mensing (52). Simpson and Dixon

(71) used experienced teachers in summer-session classes to demonstrate a procedure by which high-school and college teachers can obtain student reactions regarding the texts they are using; in the process of demonstrating the former, they obtained student ratings on 12 texts commonly used in advanced educational psychology classes. Simpson (70) also enlisted the aid of his students in rating textbooks in educational psychology according to the degree of helpfulness of their content in solving teacher and administrator problems. Grady (23) compared recommendations for supplementary reading made in five textbooks in U. S. history published between 1910 and 1920 with those made in five texts published between 1930 and 1940; the later book contained a larger number of references with more stress placed on fiction and biography.

Interest Factors

Rudman (62) and Shores (69) asked 6313 pupils, 4531 parents, 212 teachers, and 169 librarians to find out what children look up in books, what they want to find out about, and what they want to read about; a secondary objective was to find out whether the adult groups had the same desires for children as children had for themselves with respect to reading and informational needs. They found that generally children's and adults' desires are in agreement, but that children are not necessarily interested in asking about the same things that they want to read about. Scanlan (66) analyzed circulation records of fiction books borrowed by children in the St. Paul public library; of the 100 books borrowed most frequently, 64 had been published since 1930. Rankin (58) studied the features of favorite fiction books which caused them to be selected for recreational reading; books found popular between 1920 and 1930 were compared with books read most frequently in 1940 and 1941. The theme or specific topic of a book was the most important factor influencing choice. McCarty (35) found general fiction to lead the list in loans to students in secondary school. Jones (30) found *Life, Reader's Digest*, and the *Saturday Evening Post* read by 50 to 70 percent of college students.

Textbooks and International Understanding

It has long been held that much could be done to improve international friendship and understanding by careful attention to what is said and not said about other nations in the school textbooks of any one country. Efforts to improve textbooks as agents for better international understanding date back to about 1915. The history of this movement was sketched by Quillen (57) and by UNESCO (75). Since World War II the American Council on Education (3, 4) has been active in furthering this movement. The major findings of the American Council on Education studies were summarized in popular form by Stewart (73). The textbook treatment accorded specific nationality groups within our own culture were analyzed by committees of various professional organizations (1, 2, 3). With very few exceptions, textbooks and courses of study are free of intentional bias

toward any group in the United States. There are many instances, however, of careless wording which tend to perpetuate antagonisms now current in our culture. There are also many illustrations of inaccurate writing which result in hidden biases. There is still much evidence of unintentional stereotyping. Textbooks are more likely to err in omission of important factors and in the highlighting of unimportant elements than in deliberate misrepresentation.

Loosely allied to the relationship between textbook content and cultural tensions in our own country or international understanding are three studies in which textbooks were examined from other viewpoints. Dreier (13) analyzed third-grade arithmetic books to determine the extent to which these texts capitalized upon the rural backgrounds of pupils. Grossnickle (25) analyzed the kinds of pictures and their uses in eight series of arithmetics in Grades III thru VI. Hill (26) examined nine series of social studies texts of the integrated type for the elementary grades; readability, pictures, maps, study aids, and teacher aids were analyzed and appraised.

Textbook Presentation and Format

Recent years have witnessed much interest in the difficulty and other readability factors of instructional materials. Dolch (12) found that modern first readers contain about 1300 more running words and third readers about 13,000 more running words than did the corresponding McGuffey readers. The McGuffey readers had about the same percent of difficult words as modern readers, but the McGuffey readers introduced them a year earlier. Read (59) found that reading textbooks depend increasingly less on pictures to help teach reading as the grade level advances. Staiger (72) studied 44 language factors which might create difficulty in primary reading. Berger (6) compared the list of words used only once in third-grade health readers with words used by children in daily speech and written work. Gentry (22) studied the vocabulary load of 66 preprimers. Sentence length in 121 first-grade readers, as well as a vocabulary analysis of the same books, was examined by Kearney (31, 32). Thru the use of his readability formula, Yoakam (82) found that readers, histories, and other children's books published during the 1930's had a grade-placement rating of 3.5 while the publishers' recommended grade placement for the same books was 2.2; for books published during the 1940's the formula rating was 4.3 while the publishers' recommended grade placements averaged 4.7.

The readability of elementary-school books other than readers was studied by several persons. Johnson (29) tested 684 pupils on a random sample of 150 of the 1500 words found as terms in geography, history, literature, science, health, and arithmetic in the fifth grade. All but 16 of the 150 words had multiple meanings, 56 of them having as many as five different meanings. Johnson concluded that there are many terms

which children do not know and that vocabulary development and enrichment become imperative if children are to have success in reading in content subjects. Serra (68), as a result of summarizing 14 studies dealing with concept load completed before 1945, concluded that the concept load in the social studies was excessive and urged more research on this problem. Wood (81) found that the Yoakam and the Dale-Chall readability formulas gave about the same grade-placement rating to a sample of intermediate-grade textbooks; teachers rated nine of the texts as suitable for the grade in which they were used while the formulas gave such a rating to only seven of the texts. Using readability formulas, Faison (20) found mathematics texts most difficult and literature texts the easiest in Grades V thru VIII; history and science texts received intermediate ratings of difficulty.

Vogel (78) developed a spot-check evaluation scale for high-school science texts. Mallinson and his various associates determined the reading difficulty of general physical science and earth science texts (38), general science texts (39), biology texts (40), chemistry texts (41), physics texts (42), junior high-school science texts (43), and five elementary-school science series (44). Mallinson (36, 37) concluded that science textbooks for children in the middle grades tend to be too difficult with respect to reading level. As children progress thru the elementary school into secondary school and college, certain passages still remain too difficult even for superior students. Average students in junior high school and later grades, however, are able to read the science books intended for them.

Grade placement of Newbery Prize books was studied by Miller (54). He found that children's tested comprehension of selected passages placed the books at a higher grade level than did the Washburn or Flesch formulas. Miller recommended that most of the Newbery Prize books be placed at the junior high-school level. Russell and Merrill (63) asked 63 librarians to give a grade-placement rating to 60 children's books. None of the books was placed at the same grade level by all the librarians, the most usual range in judgment being from three to four grade levels, with eight books judged as suitable over a five-grade range. The authors questioned the appropriateness of arriving at grade-placement recommendations on the basis of opinion of a few so-called experts.

After an interval of nine years, Edgerton (17) repeated his earlier study (16) of the difficulty of three sets of children's encyclopedias. In the earlier study the general rating placed *Britannica Junior* at Grade IX, *Compton's* at Grade X, and *World Book* at Grade XI. In the 1954 report the average ratings were: *World Book*, Grade VI; *Britannica Junior*, Grade VII; and *Compton's*, Grade VIII.

The comparative readability of newspaper items and eighth-grade readers was studied by Dunlap (14); the average difficulty of reader content was 9.1 whereas the difficulty of the newspaper items averaged 9.6. Witherington (80) found the readability of educational psychology texts to range from Grade X to Grade XII in difficulty.

Intermediate-grade reading materials of high interest but of low reading difficulty in the content fields have been at a premium but are essential to effective adaptation of instruction to individual differences. Benbrook (5) made an important contribution by developing and validating an outline of criteria for writing informative materials for retarded readers in the intermediate grades.

Physical Characteristics of Printed Materials

Burtt (8) summarized researches at Ohio State University dealing with typography and readability. The findings showed, among other things, that materials set in capitals and that lines of moderate length (about 80 mm) are most legible with the sizes of type in common use. North and Jenkins (56) found the "spaced unit" more easily read than the "square span" or the "standard unit." Large books and bound journals tend to slant the page away from the reader. Tinker (74) tested the effect of slanted text upon the readability of print and found that reading efficiency is retarded 5.7 percent by a 45° slant and 16.4 percent by a 60° slant. Schmidt's survey (67) of instruction materials in the sight-saving field showed that the books currently available in clear type date back to 1906 and extend to 1938, with only one title published as late as 1941.

Malter studied the ability of children to read conventionalized diagrammatic symbols (46), cross sections (47), and process diagrams (49). In his summary (48) of these studies he gave suggestions to illustrators and warned that without adult help children experience difficulty in reading diagrams. Whipple (79) found that the theme of pictures is important in causing children to choose a book and that illustrations play an important role in determining whether the book is actually read; the quality and interest value of illustrations are more important than the number or size of illustrations. Vernon (77) tested the value of pictorial illustrations in remembering verbal material; with twelfth-grade students the versions illustrated by pictures were not remembered significantly better than those without pictures or those with graphs. In a more detailed analysis of students' use of graphs, Vernon (76) found evidence which tended to show that graphs confuse rather than aid comprehension and recall.

Rudisill (61) tested the validity of the high valuation adults place on the use of colored illustrations in children's books. She found that most children prefer the realistically colored one to the uncolored version if two pictures are alike in all other aspects; with or without color, children prefer the one giving the truest appearance of realism. Her findings relating to children's preference for realistically colored pictures are in accord with Whipple's report (79). Without supplying definitive conclusions, Meyer's study (53) raises an interesting question about the value of defining new words in footnotes in school textbooks.

Textbook Uses

Gross (24) surveyed history teachers in 100 California high schools to ascertain their uses of American history texts; 79 percent followed one text very closely, but only 12 percent said that present texts were satisfactory; 64 percent made specific suggestions for improving texts. St. Lawrence (64) studied the uses which teachers made of the teaching aids in biology texts; of the 14 types of aids found in the books, only the vocabularies, review questions, and outlines or summaries were used by as many as 50 percent of the teachers. Mauck and Swenson (50) found that children read more books if titles for recreational reading were made easily accessible but that reading ranked rather low as a spare-time activity. Rojas (60) studied three series of basal readers to appraise their suitability for use with bilingual children in the first grade.

Magazine and Textbook Adoption Policies and Practices

Mallon (45) found much variation among 219 high schools in the number and titles of magazine subscriptions, the annual budget for such subscriptions, and the number of journals placed in bound volumes. Size of school did not seem to be a factor in the number of magazines taken; 43 percent of the schools bound no periodicals whereas 11 percent bound from 15 to 36.

Keesecker (33) reported on the administration and cost of free textbooks in the 34 states and the District of Columbia which require free textbooks, and in the 14 states which authorize free books. In about one-third of the states the books are purchased and paid for by the state; in 12 states the responsibility for purchase and the cost are shared by the state and local units; in 20 states textbooks are purchased and paid for by local districts. The average cost of textbooks was about 1.1 percent of the annual per-pupil expenditure. Burnett (7) found that statewide adoptions are made in 24 states and that in the other 24 states local districts make the selection. Durrance's analysis (15) of methods of textbook selection showed that the local district is the selecting authority in 17 states altho state boards of education perform this role in 14 states. In examining the censorship problem as it relates to free textbooks, Erickson (19) found only two cases in which the question of censorship had reached the courts.

Conclusions

It is a well-known fact that printed materials are the most accessible and so the most widely used type of material for purposes of instruction. With this in mind, one might well expect ample and varied research as well as extensive and systematic studies which relate to various problems in regard to printed materials. In general, however, the writers' review of

a decade of published research regarding printed materials did not reveal such to be the case.

The application of readability formulas in order to determine grade placement seems to have been dealt with more widely than other problems. As a result textbooks, supplementary materials, and encyclopedias are now more nearly correctly placed as to grade than was the case 10 to 15 years ago. However, some findings indicate that such materials still tend to be overgraded. The vocabulary load in basic reading materials has been given extensive attention. Further research regarding the vocabulary and concept load in the content areas is needed. In addition, more of this research should probably be along such lines as to lead teachers to understand and use better methods of dealing with the concept load in the content areas. Published research on problems pertaining to vocabulary in such textbooks as arithmetic and language also seems quite inadequate.

Further careful research is needed in numerous other areas as these relate to producing and using materials. Research findings indicate that textbooks are free of intentional bias toward other culture groups. However, much that is unintentional is found in printed materials because of careless wording, omissions, and stereotyping. Finding ways of avoiding the unintentional seems to be a problem which needs careful attention. Research is needed which pertains to ways of using the textbook in both the skill and the content areas. The relative effectiveness of making use of such teaching aids as summaries, bibliographies, activities, and visual materials as suggested by many authors of secondary and college textbooks has not been determined. Another problem in need of attention is that of how to produce materials for special purposes such as teaching English to bilingual children.

In general, this chapter has dealt with research on printed learning materials in relation to the three major areas of production, administration, and use. Altho problems remain unanswered regarding all three aspects of printed materials, published research in the area of using printed materials is judged to be most incomplete and inadequate.

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CHAPTER II

Audio-Visual Materials

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DURING the past decade, research in audio-visual communication has increased largely because of the research programs being conducted by the Armed Services. This 10-year period has also seen a changing research emphasis from the comparative study of different kinds of instructional technics and the attempts to justify the use of AV materials to the investigation of variables within the materials themselves and the methods of use in order to increase their instructional and persuasive effectiveness.

Few general reviews of the research have been written since Stenius' article (140) of 1945. McClusky (92) analyzed the classical research, and Dale, Finn, and Hoban (33, 34) made a selective review of the literature to 1948. Bibliographies were compiled by the staff of the Instructional Film Research Program (25) and by Larson and Runden (86). But the most comprehensive analysis to date was the 1950 report prepared for the Instructional Film Research Program at Pennsylvania State College by Hoban and VanOrmer (61), which serves as a bench mark from which any subsequent review of instructional film research must take its direction. The present review will lean heavily on the Hoban-VanOrmer report for the analysis of film research prior to 1945, and will review selected AV research published during the last 10 years. This review will be limited to a comparison of AV materials, characteristics of the learner audience, and the use of AV materials. No report of the voluminous research on film production technics will be included.

Effectiveness of Audio-Visual Materials

Considerable evidence has accumulated on the effectiveness of AV materials as compared with conventional means of instruction and with other AV materials. This section will review the major studies comparing instructional technics.

Motion Pictures

The motion picture film research will be reviewed with three instructional objectives in mind: imparting a knowledge of facts; teaching perceptual-motor skills; and influencing motivation, attitudes, and opinions, which conforms roughly to the Hoban-VanOrmer pattern.

Knowledge of Facts. The evidence during the past decade supported Hoban and VanOrmer's conclusion that films can teach factual information effectively over a wide range of subjectmatter content, age, abilities, and conditions of use. This factual learning, however, tends to be rather

specific to the information actually communicated by the film, there apparently being nothing in the film presentation, *per se*, that would assure better learning. Several studies reported by Hovland, Lumsdaine, and Sheffield (64) showed that films had a considerable influence on increasing soldiers' factual knowledge of the background of the war, the German war strategy, and the events of the so-called Battle of Britain. Meierhenry (99) reported that Nebraska high-school classes, devoting one-sixth of their instructional time in certain courses to an enrichment program with motion pictures, made significantly better scores than nonfilm classes on informational tests directly related to the content of the films and equal scores on national standardized tests.

Studies conducted since the Hoban-VanOrmer report substantiate the earlier findings. VanderMeer (153) found that a body of factual information such as high-school general science could be taught by films alone almost as effectively as by a teacher using conventional classroom procedures and even better if the films were introduced and supplemented by brief study guides. Anderson, Montgomery, and Ridgway (8) compared the teaching of high-school biology (a) in the traditional textbook fashion with a minimum of laboratory work; (b) using 18 appropriate films to supplement the text materials but with no laboratory experiences; (c) using laboratory experiences, such as dissection and examination of specimens, but with no films; and (d) using films plus the laboratory methods. As measured by the *Minnesota State Board Examination in Biology*, the students in the combined film and laboratory groups achieved significantly more factual information than those in the other three groups. Barry and Smith (14) investigated the merit of the Iowa Reading Films in teaching reading in Grade IX and found that the films themselves did not have a significant effect upon learning. All experimental methods resulted in gains, probably due to the focused attention on reading and the increased motivation of students.

Perceptual-Motor Skills. Until the Pennsylvania State University Instructional Film Research Program began an intensive research program, little experimental evidence had accumulated on the use of films in teaching perceptual-motor skills. Such occasional research as that by Brown and Messersmith (18) and Priebe and Burton (116) demonstrated that films were able to teach athletic skills. VanderMeer (152) studied the use of eight U. S. Office of Education films in the training of lathe operators over a prolonged period and found that the use of films cut the working time, resulted in a reduction of the period of trial-and-error learning, and produced more factual information on machine operation. VanderMeer concluded that films are probably more effective in teaching the more complex skills than the simple ones. Hoban (60) reported a study by Beck and Lumsdaine which compared the teaching of the assembly and disassembly of a portable radar station with a film and with a competent instructor using a scale model. Altho the two groups required about the same length of time to perform the operations when

tested, the investigators concluded that the film instruction increased teamwork and efficiency.

Roshal (121) studied the effects of certain variables of learner representation on learning to tie knots and found (a) that a film is more effective if the task is portrayed from the viewing angle that would be assumed by the learner in performing the skill, and (b) that a presentation of the motions involved is more effective than presenting a series of static photographs. Two studies were made by Jaspen (72, 73) on the effects of a number of film variables on learning the assembly of the breech block of the 40mm antiaircraft gun by naval trainees. An experimental film was able to teach 98 percent of the men how to assemble the breech block. Jaspen concluded that a slow rate of development, the pointing out of errors to be avoided, the repetition of the assembly demonstration, and the participation by the learner in the performance of the task contribute significantly to the effectiveness of the film. Harby (50, 51) and Murnin, Hayes, and Harby (106) used the daylight projection of repetitive film loops in the teaching of such athletic skills as tumbling and basketball free-throw shooting. They found that a repeated motion picture demonstration was at least as effective as a live instructor's demonstration, but that the live instruction was superior when the technic of individual coaching was added. Zuckerman (168) pointed out that a medium level of verbalization (89-125 words per minute) and directive statements using the imperative mood in the spoken commentary were most effective in teaching naval trainees how to tie knots. VanderMeer and Cogswell (154) successfully used an Army training film to teach Army film projectionist trainees how to operate a motion picture projector. Cogswell (31) found that a three-dimensional film on the assembly of the breech block of the 40mm antiaircraft gun was no more effective in teaching the assembly skill than the two-dimensional film; however, the judgment of depth was not an essential cue to learning in this training situation.

Motivation, Attitudes, and Opinions. Hoban and VanOrmer (61) in their intensive study of the literature on this topic concluded that films can modify motivations, attitudes, and opinions if they are designed to stimulate or reinforce the existing beliefs of the audience. There is, however, little evidence that films can make changes if they are contrary to the existing beliefs, personality structure, or social environment of the individual in the audience.

More recently, Kishler (81) studied the effect that audience attitude toward and audience identification with the main character of a film had upon learning. Using the dramatic film, *Keys of the Kingdom*, whose starring role is that of a Catholic priest, Kishler found that the film had more effect upon the tolerance attitude of those who originally held the role of Catholic priest in high regard than those who held it in low regard. Mertens (101) studied the effect of five mental hygiene films on a group of university freshman women and found that those who viewed the films

improved significantly in their individual perceptions of themselves. The least well-adjusted women showed the greatest emotional involvement with the films, and those who had problems similar to the problems discussed in the films seemed to react more strongly and remembered the films longer. Stein (138) reported that such films could be used in a program of mental therapy. McFarlane (94) found that the use of a number of films relating to cultural groups failed to produce any significant attitude change toward other races in eight- and nine-year-old Scottish children. However, the results suggested that "story" films might be better for developing attitudes than "nonstory" films. Fearing (40) found that films on venereal disease and malaria discipline were effective in changing the attitudes of naval trainees and college students in the direction advocated by the films. Meierhenry (98) reported Peterson's doctoral dissertation on the effectiveness of selected films in modifying the beliefs of high-school students toward the United Nations and its activities. As measured by a specially prepared scale, the films changed students' beliefs positively as compared with incidental teaching about the UN in control schools. Hovland, Janis, and Kelley's analysis (63) of persuasive communications has direct application to this area.

Television

Educational television has received the most concentrated study of any of the AV materials during the past several years. Altho the greatest emphasis has been on the social effects of commercial TV, as reported by Coffin (30) and Finn (41), significant studies are being conducted in the instructional use of TV. Carpenter and Greenhill (26) recently reviewed the most important of these. This review will treat only the research on the instructional aspects of TV in the Armed Services, schools and colleges, and adult education.

In the Armed Services. Rock, Duva, and Murray (118) studied the comparative effectiveness of TV, kinescope recordings, and regular classroom instruction in teaching naval air reservists a series of training lessons. TV and TV recordings were found to be superior to local instructors and about equal in effectiveness. The men rated the acceptability of TV very high. Rock, Duva, and Murray (119), in another study to determine the retention of TV instruction by 3000 Army reservists, found that officers and men made significant learning gains from the TV instruction and retained a considerable amount of the learning when retested three to six weeks later. At the U. S. Naval Academy (17), at Keesler Air Force Base (35), in the Quartermaster Training Command (149), and at the Signal School at Fort Monmouth, New Jersey (150), TV instruction was found to be just as effective as regular classroom instruction in teaching training subjects. The most comprehensive military TV study made to date was conducted by Kanner, Runyon, and Desiderato (75, 76) for the Department of the Army. They compared televised and regular instruction for 14 selected hours of Army basic

training, making comparisons between kinescopic recordings and regular instruction and studying factors that influenced retention. About 12,000 basic trainees were used in the experiments. The investigators found that TV instruction was (a) at least as effective as regular instruction, (b) more effective for lower-aptitude groups, and (c) remembered at least as well as regular instruction.

In testing the effectiveness of the kinescope recording in teaching, Hurst (65), Jackson (70), Kanner, Runyon, and Desiderato (76), and Stover and Tear (142) all found the kinescope recording of a TV program to be at least as effective as regular instruction. Fritz (42) and Jackson (71) surveyed the principles of training by TV and the use of TV in military training.

In Elementary and Secondary Schools. The Philadelphia Public Schools (115) reported on their TV activities and generalized from over seven years of in-school telecasting experience. Hansen (48) reported a limited experiment in teaching elementary-school music by TV in the Washington, D. C., public schools. Pupils taught by TV appeared to learn about as much music as those taught by regular methods. However, parents and pupils were highly enthusiastic about the TV programs, and homebound children also benefited from the instruction. Hansen (49) later administered an evaluation questionnaire to the teachers who were using the in-school TV lessons in science, music, French, and Spanish. More than 89 percent of the 303 teachers who replied considered the TV lessons valuable enough to continue. Stanley (137) evaluated 92 half-hour experimental TV programs for the 1954-55 school year in the San Diego, California, public schools by means of teacher subjective evaluation and a study of two elementary programs produced with the San Diego Zoo. He reported that teachers reacted favorably to the programs, that educational TV was an effective instructional technic even with primary-school pupils, and that it appeared to have a number of indirect values in education. Kelley and Conrad (79), in a study sponsored by the Fund for the Advancement of Education, attempted to determine what constitutes the good TV teacher and explored the possibility of televising outstanding teaching of American history at the Grade V level. The Canadian Broadcasting Corporation (21), in cooperation with the National Advisory Council on School Broadcasting, studied the extent to which TV could help Grade V to Grade VIII teachers in their daily teaching. The results were evaluated by means of questionnaires, which were answered by 513 teachers from 205 Canadian schools. The specially prepared programs, which were recorded as kinescopes, were judged to have made a definite contribution to teaching. In another study, the Canadian Broadcasting Corporation (20) studied the effects of a series of telecasts planned to be viewed by school children at home. Of about 2000 teacher evaluation questionnaires sent out, 592 were returned. The telecasts, which had as their main aim that of visually supplementing school radio broadcasts, were approved by 94 percent of the reporting teachers, 89 percent

saying that pupils could recall the salient points, 87 percent that pupils obtained a better knowledge of the subject, and 80 percent that the viewers were more interested or better motivated than the nonviewers. Anderson and VanderMeer (7) compared TV instruction with regular classroom instruction in teaching the slide rule to high-school sophomores. The TV group learned just about as well as the classroom group but tended to forget the instruction more readily. Sherman (126) explored the feasibility of using TV for evaluating instructional films and found that evaluations given by teachers to televised films are as reliable and usable for determining purchase as are the evaluations of regular AV committees viewing the films directly.

In Universities and Colleges. In 1953 Husband (66) at Iowa State College presented a psychology course for credit over WOI-TV under four conditions: (a) by TV at home, (b) in a studio class while the TV presentation was given, (c) in campus kinescope class with informal discussion afterwards, and (d) in two campus TV classes. He found home TV registrants higher in achievement than the two classroom groups or the studio group, but the statistical significance of the differences was not reported. The campus kinescope class was superior to all the others. Paul and Ogilvie (112) and Williams (164) at the University of Toronto studied the learning and retention of a lecture on an unfamiliar topic under four conditions. One-fourth of the 108 undergraduates received the lecture on TV, one-fourth on radio, one-fourth in the studio where the lecture originated, and one-fourth read the same lecture mimeographed with some words capitalized for emphasis. The TV audience learned significantly more than the other groups, and the radio audience learned more than the reading audience as shown by the test immediately following the lecture. Eight months later the audiences maintained their same relative positions, the rate of forgetting appearing to be unrelated to the channel of communication.

The most comprehensive TV study yet conducted, other than by the Armed Services, was recently completed by the Instructional Film Research Program at Pennsylvania State University under the sponsorship of the Fund for the Advancement of Education. As reported by Carpenter and Greenhill (26), this study investigated the closed-circuit teaching of three one-semester courses: general chemistry, general psychology, and psychology of marriage. Comparisons for the chemistry and psychology courses were made among those receiving lectures over the closed-circuit TV system, those receiving them in the same room as the instructor with TV equipment present, and those receiving them as lectures with no TV equipment present (control group). The marriage course compared the TV originating room and TV receiving room groups. Instruction by TV was found to be as effective as lecture-demonstration in teaching informational learning, students accepted the TV courses but were mainly neutral or slightly negative toward them, the university administration accepted closed-circuit TV as a possible solution to increased enrolment,

but experienced instructors generally preferred their accustomed teaching procedures to TV instruction.

In Adult Education. Some of the TV courses studied with campus groups were also telecast to adults in the TV audience. At Iowa State College Husband (66) found that the home TV audience registered for credit in a psychology course achieved higher grades than the campus TV and regular classes. Stromberg (143) at Western Reserve University reported that adult TV students attained a higher median score on a standardized examination in psychology than regular campus students after taking the three-credit semester course on TV. Wilson and Moe (165) studied the effectiveness of a series of Department of Agriculture TV programs in teaching sewing practices. They found a high interest in the programs and the use of at least one of the practices by half the women surveyed. The Iowa State College Agricultural Extension Service (68) presented a 10-lesson course in dressmaking with over 3000 enrollees. Over one-third of the sample interviewed had actually completed a dress, and 58 percent considered the course very helpful. Shimberg (127) reported a study made by the Educational Testing Service for the American Red Cross over the University of Houston station on the effectiveness of teaching home nursing by TV. Three experimental groups were set up: TV only, TV plus weekly practice at Red Cross headquarters, and regular Red Cross classroom instruction. The TV instruction was found to be as effective as classroom instruction in teaching facts about home nursing and the principles involved in the care of the sick as measured by a written test, but the classroom group did significantly (but not practically) better on the performance test. In comparison with time spent, the TV group actually learned more than the classroom group.

Altho unrelated to the usual kind of adult education use of TV, the study by Tucker and others (146) pointed up another use for closed-circuit TV. They studied the effectiveness of closed-circuit TV as a medium for therapy in the treatment of the mentally ill in a California mental hospital. They found that the group behavior patterns of mentally ill patients were improved significantly when given closed-circuit TV therapy in the areas of communication and interpersonal relationships, socialization and self-care, work activities, and recreation.

Filmstrips and Slides

Filmstrips and slides are among the most economical of AV materials; therefore, their effectiveness as compared with the more expensive motion picture has frequently been studied. Hoban and VanOrmer (61) reported early studies comparing filmstrips and slides with silent motion pictures and found in general that the projected still pictures were about as effective in teaching factual information as silent films. Carson (27) reported a study made by the Scottish Educational Film Association in which long and abbreviated versions of a filmstrip on American cowboys were compared with a sound film on the same subject. As measured by

a 40-item true-false and multiple-choice test, the two filmstrip groups were greatly superior to the sound film groups in learning information and concepts. Vernon's experiment (158) in teaching British seamen to comprehend and learn facts about taking soundings with a lead line found the filmstrip and film to be about equal in value with a great advantage to the method that combined the two technics. Gibson (46) compared a group instructed thru films with a lecture group organized around a series of 19 slides and with a group that read a well-executed and illustrated booklet on the air-trainee subject of position firing. The film group learned significantly more facts, the lecture and manual groups achieving about the same. It should be noted, however, that only a few slides were used by the lecture group. Heidgerken (55) found no differences among filmstrips, motion pictures, and filmstrips combined with motion pictures in teaching units in a course on nursing arts. Hovland, Lumsdaine, and Sheffield (64) compared the effectiveness of an Army training film on map-reading with an Army filmstrip that presented the same content. Army Quartermaster trainees, tested by a 39-item verbal and visualized test, learned slightly but not reliably more from the filmstrip.

Anderson, Montgomery, and Smith (9, 10) compared three methods of teaching spelling in Grades III to V: the Newlon-Hanna method, the pupil-coach method, and a so-called multi-sensory method which used projected slides of the words. As measured by retention tests three months later, the three methods were about equal in effectiveness, with an advantage to the multi-sensory method in Grade III. Jackson (69) found filmstrips made from frames of motion pictures on the life of St. Paul to have about the same teaching value as the film itself in teaching the Bible to high-school students. Abramson (1) studied the relative effectiveness of two methods of teaching a year course in elementary mechanics to students in a large city high school where various socioeconomic factors produced a general lack of interest in school work. He studied the value of the standard method of instruction (which combined recitation, demonstration, film, supervised study, and laboratory exercises) with a method using the projection of pictorial ideographs as slides, each slide followed by several "thought" questions which focused on certain elements and relationships in the slides. Achievement was measured by specially prepared tests given immediately and two months later. The slide group achieved significantly more learning than the control group on all three units of instruction on both the immediate and the two-month retention tests.

Stampolis and Sewell (136) compared the use of four filmstrips with lectures in teaching economic concepts to university students. In only one of the four cases was the filmstrip method significantly superior to the lecture method, no differences existing in the remaining three cases. However, every student felt that the filmstrip on business cycles, which produced the superior gain, was the best filmstrip of the four used. Helliwell (56) investigated the values of the filmstrip and the field trip in

teaching factual knowledge of the dairy and the newspaper to 14- and 15-year-old pupils in England. The field-trip method was found to be greatly superior to the filmstrip, but the combination of methods was the most effective of the three. Slattery (129) compared the effectiveness of silent filmstrips with sound films in the informational and conceptual learning of Grade V social studies. She found the filmstrips, both with and without student participation, to be significantly superior to the sound motion pictures. Lasser (87) tested the effectiveness of a filmstrip versus a film in teaching a simple performance task of repairing a broken sash cord in a window. No significant differences were found except for one suboperation on which the film group did much better, presumably because the film had continuity. On several operations neither medium was effective. Torkelson (145) studied mock-ups, training manual illustrations alone, cutaways, and projected black and white and colored transparencies as aids in teaching the nomenclature and functioning of certain types of naval ordnance to NROTC students and naval trainee recruits. Altho the three-dimensional mock-ups and cutaways produced superior learning, the differences were so small in proportion to their high cost that their general use appeared to be unjustified. Kale and Grosslight (74) studied the learning of Russian vocabulary under several conditions, including pictures plus titles versus titles only, motion versus still pictures, and sound versus silent pictures. They found that (a) pictures of an object or act were an aid to learning vocabulary, (b) still pictures were as effective as moving pictures, and (c) pronunciation of the words by a narrator seemed to inhibit learning to write the words.

Zuckerman (169) demonstrated how a preproduction filmstrip of the rough "story-board" for a training film could be used to predict the relative learning that would result on the completed film. In *The Healthy Village*, a report on the visual education experiment in West China conducted by UNESCO (148), the general value of AV materials in teaching health principles to a partially literate rural population was pointed up. Filmstrips and slides were considered the most effective means used in reaching large numbers of people and in making the deepest and most lasting impression. Vergis (155) found that addition of the third dimension to colored slides had no significant effect upon Grade V pupils' learning of factual information that was not dependent upon depth cues for understanding. However, the 3-D slides were greatly superior in influencing the interpretation of size and form in space. He concluded that the types of pictures best suited for 3-D projection are those that are specially chosen to communicate certain spatial concepts.

Pictorial Illustration and Graphic Materials

There is a dearth of recent research on the effectiveness of pictorial illustration and graphic materials in aiding learning. Adequate reviews have been prepared, however, by Dale, Finn, and Hoban (34) and Spaulding (135). The most nearly complete analysis was made by the University

of Illinois, Division of Communications (151), in its annotated review of the research evidence on how pictures and graphs aid learning from print.

Since these earlier reported studies, which demonstrated the value of pictorial illustration, Vernon (156) compared the learning of factual information by illustrated and unillustrated materials which were read by or read to 11- and 12-year-old British school children. She found that the illustrations failed to add to the understanding or remembering of the verbal text. Peterson and Schramm (114) studied how accurately different kinds of graphs are read and found that the *circle* graph was read most accurately and the *multiple area column* graph least accurately when used to compare parts of a whole. Peterson (113) applied this research to a practical manual on the use of graphs in Air Force teaching materials. Vernon (157) summarized a series of studies and articles on graphic presentation with the general conclusions that (a) readers require special training to enable them to understand graphic materials properly, (b) placing information in diagrams does not necessarily ensure that the material will be understood and remembered better than when it is presented in a table of figures, (c) certain types of data require certain types of diagrams, and (d) people usually understand diagrams better when they are accompanied by verbal explanations.

Radio and Recordings

Only a few basic research studies have been made on the effectiveness of radio in teaching factual information and in changing attitudes and interests. Early research reported by Wrightstone (167) indicated that factual materials can be acquired from radio broadcasts as effectively as thru conventional classroom teaching, but no definitive studies of changing attitudes and interests were reported by him.

More recently, Haugh (54) found that there were no significant differences in the effectiveness of reading or listening to radio drama in acquiring information and that neither method caused any shift in attitudes. Rothney and Hansen (122) made an exploratory study, using the questionnaire method of obtaining Grade V thru Grade VIII pupil reactions to a Wisconsin School of the Air radio program designed to teach children ideals of American democracy and basic concepts of intercultural relations. The programs appeared to develop favorable attitudes toward members of other cultural groups and were liked by 97 percent of the pupils. Mitchell (104) studied the effects of variety and musical radio programs upon silent reading achievement by Grade VI pupils and found that the group was adversely affected by the variety program but not by the musical program.

Several workers have measured the understandability of radio programs. Chall and Dial (28) found that understanding and interest in newscasts were related to the level of difficulty of the material as measured by the Dale-Chall formula. Silvey (128) summarized a study by Vernon (159) on the intelligibility of educational broadcasts by the British Broadcasting

Corporation. Qualities which made for intelligibility were (a) limitation of number of major teaching points, (b) clear summaries, (c) lucidity and liveliness of style, (d) concreteness of both subjectmatter and treatment, and (e) the illustration of principles or abstract points. Qualities which hindered intelligibility were (a) too speedy delivery, (b) flowery or literary metaphors, (c) overlong sentences, (d) difficult vocabulary, and (e) complex sentence structure. Intelligibility was not affected by the number of minor teaching points, the speaker's delivery, or by conversational speech.

Three-Dimensional Materials

Most of the research on the values of three-dimensional materials has been made by the Armed Services. In a series of technical reports (36, 37, 38, 43) evaluational procedures and requirements for construction and use of training aids and devices were developed.

Torkelson (145) found 3-D mock-ups and cutaways of a torpedo and an antiaircraft weapon superior to manual illustrations and to black and white and colored transparencies in teaching information about the devices to NROTC students and naval recruits. He concluded, however, that the differences were so small in proportion to their high cost as to discourage their use except under special conditions. Murnin, VanderMeer, and Vris (107) discovered no advantages for the 3-D mock-up over methods that used naval trainee drawings of schematic electrical systems or present teaching methods which used no devices. Vris (160), after finding that complex motor skills, such as threading a motion picture projector, could be taught better by three-dimensional models than by two-dimensional aids, concluded that 3-D materials should be used where the task to be learned is essentially three-dimensional in nature. This conclusion was supported by Vergis' findings (155) with 3-D slides and Cogswell's study (31) of stereoscopic motion pictures in teaching the assembly of the breech block of an antiaircraft gun. Swanson (144) found no appreciable differences in training effectiveness of mock-ups, cutaways, animated panels, charts, and symbolic diagrams in teaching skilled Air Force personnel the maintenance of the hydraulic, fuel, and rudder power control systems of the B-47 aircraft.

Evans and Ray (39) studied the teaching of the micrometer to high-school students. In the control group each student had an actual micrometer and was instructed orally in the names of the parts and their functions. The experimental group received oral instruction with a large wall model of the micrometer. Altho the scale model group made fewer errors in naming the parts of the micrometer, no significant differences were found between the two groups in their abilities to make actual measurements. The Los Angeles City Schools (90) in cooperation with the Aetna Casualty and Surety Company evaluated the teaching effectiveness of the Aetna Drivotrainer in high-school driver education. They found that the Aetna Drivotrainer method (combining training on a mock-up of a car, viewing

of specially prepared films, and some on-the-road training) was equally effective in teaching driving skills and was reliably superior in changing driver attitudes when compared with the prescribed California driver education course.

Audience-Learner Characteristics

The importance of the characteristics of the learner upon the reception of instructional communications cannot be overemphasized. The earlier concept of the audience as a kind of atomistic mass, subject to persuasion or instruction by powerful communication mediums, is being viewed with increasing skepticism. We seem to be gradually approaching the position taken by Carpenter (23) when he expressed the opinion that the effects of film instruction, within certain limits, depend more upon the characteristics of the perceivers, individuals, and audiences than upon the elemental variables within films themselves.

Predisposition to Acceptance

Evidence exists that the predisposition of an audience to accept an attitude or opinion operates to influence the individual's interpretation of the communication. Kishler's study (81) supports this. Hoban (59) studied reactions to two actors in an Army training film on the operation of a motion picture projector by a target audience made up of new enrollees in an Army Projectionist School and by a nontarget audience of soldiers not enrolled in the school. The target audience made over 80 percent more responses on a reaction questionnaire and appeared to be about twice as interested in the film. In addition, the target audience tended to identify more with an "expert" model in the film and the nontarget audience with the "trainee" model. Hoban thereby hypothesized that audience involvement in and identification with instructional films is determined more by audience aspiration and the relative value placed on the aspired-to-role than to audience status at the time. In another analysis Hoban (58) concluded that audience status was related to reactions to a film and that some impedance of communication was likely to result on the upper-status level of an audience when the film presented values associated with the lower-status level. Studying the effects of five mental hygiene films on university freshman women, Mertens (101) found that the poorly adjusted women showed the greatest emotional involvement with the films, and that women with problems similar to those dealt with in the films reacted more strongly, remembered the films longer, and interpreted them in a slightly different manner. Stein (138) arrived at similar conclusions from a study of the effects of four of the same mental hygiene films on normal and abnormal individuals. Those who found the films most personally relevant and acceptable learned the most from them, women appearing to be more responsive than men, and psychologically deviant (except those acutely mentally ill) individuals finding them more relevant

than normal individuals. Rose's analysis (120) of audience reactions to the commercial film, *Life of Riley*, by means of infrared photography emphasized the importance of the background, experience, and set of the audience.

Other Factors

Hoban and VanOrmer (61) cited evidence that likes and dislikes of a film are related to the film's influence on opinions, but they found little relationship between interest in films and the information learned from them. Twyford (147) compared three kinds of rating profiles made by reactions of high-school and college students on an electrical audience-response device and found no relationship between liking a section of film and learning informational content from it.

Hoban and VanOrmer (61) pointed out that persons of high intelligence usually learn more from films than those of medium or low intelligence altho in some cases those of lower intelligence make a greater increment in learning. Smith (130, 131, 132), who has studied this variable most intensively, found that gains on films are at least as high for more intelligent individuals as for the less intelligent. Selected studies supporting this view were those of Helliwell (56), Meierhenry (98), Michael (102), Slattery (129), and Stein (138). Abramson (1) found that lower IQ groups profited more from slide discussions.

Hoban and VanOrmer (61) concluded that the difficulty of a film depends not only on its subjectmatter, but also on the learner's intelligence and his previous knowledge of the subject. Reading ability and vocabulary knowledge appear to be related to learning as well as practice in film observation.

Several recent studies on the "listenability" of film commentary were made. Allen (2) found that easier commentary, as measured by the Flesch formula, resulted in significantly greater factual learning than commentary two grade levels more difficult. Moldstad's results (105) differed in that he found no significant differences between commentaries that varied as much as six grade levels in difficulty; however, he showed the film *twice*. Nelson and VanderMeer (110) studied the effect of modifying the spoken commentary of an animated film. They found that all simplified commentaries were consistently superior to the original commentary (but not significantly), and that the best had the shortest sentences and the most personal pronouns.

Characteristics of the Learning Environment

In general, the research on the characteristics of the learning environment as it pertains to the use of AV materials of instruction has been inadequate. No study of the comparative value of the classroom versus the auditorium as the environment for viewing educational films has been conducted since Krasker's 1943 comparison (83). He used six silent

films in the classroom and auditorium with pupils in Grades VIII and IX and found that those who viewed the films in the classroom learned slightly more. Prior to this, Stoddard (141) studied the teaching of science and music units to Grade VI pupils in an auditorium with sound films, in an auditorium without films, and in classrooms without films. He found that large classes in the auditorium learned as well with films as small classes in classrooms without films, but he obtained no evidence on how well the two groups learned when both used films.

There is more evidence, altho contradictory, on the seating arrangement for a class viewing a film. In 1948 the Society of Motion Picture Engineers issued standards for the placement and size of motion picture screens in entertainment theaters, recommending that no seat be farther away from the screen than six screen widths. The Department of Audio-Visual Instruction of the NEA (108) published a number of recommendations on planning classrooms for AV use in which it recommended that the viewer sit no farther from the screen than five screen widths, no closer than two and one-half screen widths, and no farther to the side than 30° from a line perpendicular to the center of the screen. In contrast, Gibson (46) reported 20 experimental studies made by the Air Force in World War II from which he concluded that distance from the screen under normal classroom viewing conditions has no appreciable effect upon learning and that the angle of viewing in the range up to 45° has no effect. Ash and Jaspen (13) tested the optimum viewing positions and angles with a small cabinet-type rear projection screen on naval trainees and found the best viewing area to be up to 30° to the side of the center line and up to 12 screen widths deep. They concluded that, if more seating area is needed, it is better to seat the people to the sides rather than to the rear. Vergis (155), studying the seating arrangement during the viewing of three-dimensional colored slides, concluded that failure to see stereo-depth on the part of children seated within the 30° angle is probably due to individual differences and not to seating arrangement.

There is more agreement on the degree of darkness needed in a classroom for film projection. Gibson (46) concluded that some illumination in a room where films are being shown as instruction is permissible. Ash and Jaspen (13) found that, when rear projection was used on a very small screen and men were seated in the optimum seating area, they learned as well in a daylit room as in a darkened room; but, when they sat beyond the optimum limits, they learned better in the darkened room. The NEA Department of Audio-Visual Instruction (108) recommended that (a) light control be used in film showings, (b) the light on the surface of the screen be not more than $\frac{1}{10}$ of one foot-candle, (c) the room not be absolutely dark, and (d) some method of increasing the light in the room to one foot-candle for certain kinds of projected material be available. The proceedings of the Indiana and Midwest School Building Planning Conference (124) contained useful information on specifications for classroom light, sound, and thermal control.

Use of Audio-Visual Materials

For the teacher, research in the technics of utilizing AV materials has great practical importance because it has direct application to classroom teaching. The research in this section will be reviewed under a number of general classifications related to specific technics of utilization. The structure of the Hoban-VanOrmer report will not be followed, however.

Teacher Introductions and Class Preparation

Allen's article (3) is the most comprehensive published review of the research on class preparation for instructional film use. Wittich and Fowlkes (166) studied the class preparation for social studies and science films with intermediate-grade pupils, using technics of reading brief descriptive stories of the content and studying difficult words, phrases, and questions related to the film. Learning was significantly greater for the class-preparation groups over the groups that saw the films alone. Hovland, Lumsdaine, and Sheffield (64) found significant gains when they made similar introductions to a film on map-reading used with Army trainees. Allison and Ash (5) gave instructions to 480 introductory psychology college students designed to decrease motivation to learn, to have a neutral effect, or to increase motivation to learn from a film. They found that the increasing amounts of anxiety-producing instructions resulted in significantly greater learning, and that there appeared to be no relationship between the individual's chronic anxiety and the amount he learned from the film. Stein (139) discovered that, when a prefilm test containing items identical with the final test was followed by complete knowledge of test results and then a scientific film, Navy recruits scored significantly higher than when the film was shown either once or twice without the prefilm test. Hovland, Lumsdaine, and Sheffield (64), in a study of audience participation, preceded the showing of a filmstrip on the Signal Corps phonetic alphabet to Army recruits with an announcement that a test would be given following the showing. This test announcement increased learning of the phonetic alphabet significantly and overrode the effects of certain participatory technics that were used. In contrast, Michael (102) found that the announcement of a test to high-school students preceding the showing of a film on civilian defense resulted in no significant learning increment. Kay (78) found no advantage in telling high-school economics students that a film was part of their term's work and that they would be held responsible for knowing the content of it. VanderMeer and Cogswell (154) studied the effects of a film on the operation of a motion picture projector by Army trainees in a projectionist school when they were prepared for the film by receiving prefilm acquaintance with the task to be performed. Such preparation increased the learning of the skill. Gagne and Foster (44) measured the transfer of training to a motor task from paper-and-pencil practice on an illustrative representation of the task and found such preparation effective.

Student Participation Technics

During the past decade no single variable in AV use has been studied as intensively as that of participation, and no other variable has elicited such general confirmation as a means of facilitating learning. Five kinds of student participation technics will be reviewed: verbalization of response, perceptual-motor responses, knowledge of results, mental practice, and note-taking.

Verbalization of Response. May (97) reported a study by Thompson on the role of verbalization by Grade V children while learning from demonstrations of the assembly of two mechanical puzzles. Thompson found that errors in assembly were reduced when children verbalized the demonstrator's acts. Hovland, Lumsdaine, and Sheffield (64) found that verbalization of the names of letters presented in a filmstrip of the Signal Corps phonetic alphabet greatly increased the learning of the alphabet by Army recruits. Michael (102) stopped a film on civilian defense periodically to permit high-school students to answer questions, either "overtly" (wrote the answers) or "covertly" (thought the answers), on the materials they had just viewed. He found that both kinds of participation added reliably to the learning. The superior effects of the participation technics, however, held only for those items that were specifically practiced, leading to the conclusion that the increases in learning were due primarily to practice effects and not to effects of changes in motivation to learn. Kurtz and Hovland (85) presented 16 familiar objects to 72 elementary-school children, half the group locating and circling on a sheet of *pictures* the appropriate object and the other half locating and circling on a sheet of *names* of the object the appropriate ones, the latter group also pronouncing each name aloud. Tested for retention a week later, the group that verbalized at the time of presentation recalled significantly more items correctly and made fewer incorrect responses. Slattery (129) found that the reading aloud of the verbal content of social studies filmstrips by Grade V pupils resulted in significantly superior learning over informational and conceptual material presented in motion pictures and slightly better learning over the filmstrips without participation. Kale and Grosslight (74) noted that, when students pronounced Russian words after the narrator in learning the Russian vocabulary, their learning to *write* the words was inhibited.

Perceptual-Motor Responses. Roshal (121) found no significant advantages for participating in the tying of knots as the demonstration of each knot was projected by a film to 3314 naval recruits, but he attributed the negative results to the possibility that insufficient time was allowed during the film showings for effective participation. Jaspen (73) investigated further the suggestion made by Roshal that a slower rate of development in the film was needed to provide time for participation. He tested student participation in films demonstrating assembly of the breech block of the 40mm antiaircraft gun with 1818 naval trainees. Audience par-

ticipation was found to be very effective when the rate of development of the film was slow enough to permit participation, but at the fast rate of development, participation was found to have a negative effect upon learning the skill. Harby (51) used continuous repetitive film loops interspersed with practice and coaching in teaching tumbling skills to college physical education classes. Performance tests showed that the technic of interspersed practice was slightly superior to the massed technic of film demonstration but not reliably so. Using 263 naval students in a course on basic electricity, Murnin, VanderMeer, and Vris (107) studied the participatory effects of practicing exercises on a mock-up of an electrical system as a means of learning to solve electrical circuit problems, the theory of Ohm's Law, and the theory and use of DC electrical testing meters. The technic was no more effective than the regular lecture and demonstration method traditionally used, indicating that the nature of the content taught might have influenced the effects of the participation technic.

Knowledge of Results. May (96) reported Thompson's study in which it was found that Grade V children had their puzzle-assembly errors greatly reduced when their verbal errors were corrected as they orally described a demonstrator's assembly of mechanical puzzles. Gibson (46) tested two methods of teaching aircraft trainees to identify airplanes from slides. He compared the scores when only an announcement of the name of the plane was made with a provision for trainee response and subsequent knowledge of the correct response. The participatory method resulted in significant gains in planes identified correctly and a large increase in the number who got all slides correct. Kurtz, Walter, and Brenner (84) and the Yale Motion Picture Research Project (97) reported studies of the effects of participation questions that were inserted in existing films and which were answered by high-school students on work sheets followed by the giving of the correct answer. The Yale study resulted in superior informational gains for this method over the film without participation; the results on the second study were inconclusive. Michael (102) furnished "feedback," or knowledge of correct answers to questions asked in a film on civilian defense and found highly significant advantages to this technic. Harby (51) discovered the superiority of coaching and the pointing out of errors by the instructor during practice sessions interspersed with the repetitive showing of a film demonstrating tumbling skills to college physical education students. Using the Classroom Communicator, a device developed by the Instructional Film Research Program at Pennsylvania State University to enable immediate and continuous communication between the instructor and any student in the class, Hirsch (57) studied methods of furnishing knowledge of results. He found that knowledge of test results had a significant effect upon learning, particularly when the entire question and answer were provided. A double showing of the film, however, appeared to be about as effective as knowledge of test results. Stein (139) found that the presentation of a

prefilm test, which had identical, sequentially ordered items and employed complete knowledge of results, immediately followed by the film, produced significantly greater learning and retention than methods that provided no knowledge of results.

Mental Practice. Hoban and VanOrmer (61) reported earlier studies that showed "mental practice," or the inner verbalization of responses, to result in considerable positive transfer to learning of motor skills. The findings of Thompson, as reported by May (96), might be interpreted to support this generalization as it related to the assembly of mechanical puzzles by Grade V children. Michael (102) found that "covert," or mental, practice was as effective in teaching the content as "overt" practice. Harby (50) compared mental practice with physical practice in learning the basketball free throw by college physical education men students. The physical practice group was given a one-minute demonstration by an instructor followed by 20 free throws per day for 20 days. The mental practice groups viewed short repetitive films shown six times (totaling 15 minutes) each day without physical practice while the men mentally practiced the skill, one group for seven days, another for 14, and the third for 20 days. When given a final performance test, the 14-day mental practice group scored as many free throws as the 20-day physical practice group.

Note-Taking. Only two studies furnish evidence on note-taking as a participation technic. Vernon (158) studied the use of a film and a filmstrip to teach British seamen to comprehend and learn facts about taking soundings with a lead line. Note-taking during the showings was compared with the use of the same amount of time for practical instruction and practice in the skill. The note-taking technic was moderately better than practical instruction in teaching an understanding and comprehension of the process and as effective in teaching memory for facts. Ash and Carlton (12) compared the effectiveness of note-taking during the film showings (both with and without a 10-minute review of the notes) with the showing of films only. The study was conducted with college freshmen using films on high altitude flying and ocean survival and safety. It was found that note-taking interfered with learning, the film-only group achieving significantly more. Altho the review technic aided somewhat in the recall of the points written down, it did not compensate for the interference caused by taking the notes.

Class Discussions, Reviews, and Summaries

The Australian Office of Education study (32) presented the clearest evidence of the discussion and review technic used with high-school boys. Discussions of films were combined with film showings and reshowings in six different ways: (a) film alone, (b) film plus a 10-minute discussion, (c) two film showings, (d) film plus discussion followed next day by a second showing, (e) film followed next day by the discussion and a second showing, and (f) film plus discussion followed next day by a second

showing and a second discussion. The most effective method, as measured by delayed retention test, was to introduce the film, show it, discuss it immediately, and then the next day show it again (method "d"). The superiority was probably due to the repetition of the film and the time at which the discussion was held—immediately after the first screening, thus reinforcing the learning. Altho the superior method took more time than the first three methods, the study concluded that the superiority was not due merely to that factor.

In the Hovland, Lumsdaine, and Sheffield map-reading study (64), a 20-minute review exercise was used after a film on map-reading. The review increased learning reliably over a single showing of the film alone, but was not quite so effective as a teacher introduction to the film. Miller and Levine (103) studied the relative advantages of spacing the review sequences thru a film following each major topic over massing the review at the end of the film. The films taught the basic electrical circuits and Ohm's Law to 36 high-school classes. They found that the massed review at the end of the films consistently produced reliably superior learning gains. The investigators pointed out that this result supported the psychological principle of spaced practice in that the review served as a partial "second trial" appearing after a period of time had elapsed following the initial presentation of the material. Lathrop and Norford (89) studied the effectiveness of summaries built into existing instructional high-school films and found that they had only a slight effect upon learning. Harris and Buenger (52), studying the correlation between test performance on content presented by films with that presented by lecture methods, found partial evidence that provision for review might be a critical factor in increasing the correlation. Wittich and Fowlkes (166) combined discussion technics with film repetition to obtain large increases in the learning of intermediate-grade social studies and science information, but at a considerable sacrifice in the amount of time used.

Repetitive Use of Films

McTavish (95) showed four general science films to groups of college freshmen so that each group saw one of the films once, the second twice, the third three times, and the fourth four times. The films were shown continuously without discussion between showings, and so there was an opportunity for fatigue to develop. The second showing of the film increased learning significantly (a 32-percent increase), but the third showing failed to add significantly, and the fourth showing actually decreased learning. Hirsch (57) studied the effects of showing a film twice compared with a single showing and with various ways of furnishing knowledge of results to university naval reserve midshipmen. He found two showings of the film to be significantly superior to a single showing and about equal to the single showing combined with knowledge of test results. VanderMeer and Cogswell (154) also found the double showing to be superior to the single showing of a film in teaching Army pro-

jectionists how to operate a motion picture projector. Kurtz, Walter, and Brenner (84) showed films on wrenches and on snakes to Grade X students, projecting them either once or twice in succession without discussion. The results were inconclusive: The second showing of the wrenches film increased learning significantly, but the second showing of the snakes film added very little additional informational learning. In Australia, the Office of Education (32) found the double showing of a film to be superior to the single showing, and the Yale University Motion Picture Project (97) found that the second showing added almost half again as much factual information.

Rimland (117) studied three variables related to repetition of films: (a) the same versus a different presentation of the repeated task in the film, (b) the insertion of a practice period in the film versus permitting practice during the film, and (c) the effect of camera angle and level of verbalization. A series of five interrelated experiments on knot-tying was made with 2680 naval recruits. Rimland found (a) that more learning occurred when a single demonstration was repeated than when an equivalent number of different demonstrations was given; (b) that a motor skill learned from one point of view was best performed when the viewpoint during performance was the same; and (c) that for a simple skill, practice between repetitions of the film did not improve learning. Jaspen (73) found internal repetition in a film to be effective even when added to an already effective film.

Intensive Use of AV Materials

At a time when some attention is being focused upon the part that AV materials can play in helping relieve the imminent crisis in education, a review of research directly related to this question is timely. Altho only two studies actually measured the effectiveness of an intensive use of AV materials, much of the comparative research on the values of AV materials is pertinent to this problem as well.

VanderMeer (153) studied the extent to which motion pictures can substitute for teachers by comparing the relative effectiveness of instruction of Grade IX general science pupils by film alone, film plus study guides, and conventional classroom methods. To the "film alone" group 44 films were shown twice, the teacher only taking roll and maintaining order. The "film plus study guide" group was shown the films under the same conditions and also read study guides before each showing and answered the study guide questions after the showings. The "conventional" group used the usual classroom teaching technics and textbooks with a teacher but without films. The "film only" method consumed only about 80 percent of the time used by the other two methods. The three methods were of almost equal effectiveness in teaching the factual information, the "film plus study guide" method being slightly more effective than the other two. In a comprehensive four-year study carried on in Nebraska high schools with about 17,000 students, Meierhenry (98, 99) reported on

the enrichment of the science and social science curriculum thru motion pictures. For an entire school year, selected films were used in the experimental classes (one-sixth of the entire instructional time). When compared with the control classes not using instructional films, the film classes showed significant informational gains on every test devised to measure the effects of the motion pictures. As measured by standardized subject-matter tests, the film groups were either equal to or superior to the control groups.

Miscellaneous Technics

Ash (11) studied the relative effectiveness of spaced versus massed instructional film presentation. He found that for both college psychology students and naval trainees, the continuous presentation of films in a series for 45-60 minutes resulted in almost as much learning as did the presentation of the same material in three or four different spaced sessions. Harby (51) also found that the massed film demonstrations of a two-minute film on teaching a tumbling skill, repeated three times and followed by practice, was slightly superior to the technic that interspersed practice between each of the two-minute film presentations.

The evidence concerning the efficacy of the use of study guide material is conflicting. Wittich and Fowlkes (166) found that the use of study guides describing the content of the intermediate-grade social science and science films and containing questions and difficult words and phrases related to the films, when combined with class preparation by the teacher, produced significantly greater factual learning than merely viewing the films without these additional aids. VanderMeer (153), on the other hand, found no great advantage to the study-guide technic when used with Grade IX general science pupils.

The question has often been asked, Can a teacher use too many AV materials? Meierhenry (98, 99), in the extensive Nebraska high-school studies, found that the use of films for as much as one-sixth of the instructional time resulted in valuable enrichment of the school program and had no detrimental effect upon the learning of the conventional curriculum as measured by national standardized tests. VanderMeer (153) found that even as many as 44 instructional films, used over a period of one semester as the total teaching material, taught the informational material as well as teaching by the conventional methods without films.

The Australian Office of Education (32) found a relationship between attendance at motion picture theaters and learning from teaching films; high-school boys who attended entertainment motion pictures frequently learned reliably more from educational films than those who attended infrequently. Gibson (46) demonstrated the value of directing attention to the distinctive features in slides of aircraft that were being identified by aviation cadets. The groups that had the distinctive features emphasized were superior to the groups that learned the "total form" of the aircraft identification slides.

Administration of Audio-Visual Programs

The most nearly complete published review of research relating to AV administration was that of Allen and Malter (4) in the 1954 yearbook of the Department of Audio-Visual Instruction of the National Education Association. The present review will bring this up to date.

Eight years following its survey of AV education in city school systems, the NEA Research Division (62, 109) made a second survey for the school year 1953-54. During this period formal AV departments had increased from 16 percent of the reporting cities to 27 percent. About half the districts were satisfied with the administrative organization for AV education. Of those not satisfied, the chief recommendation from districts with centrally coordinated programs was for more time for the AV director, and from those without central coordination for the establishment of such coordination. Brumbaugh (19) studied certain aspects of selected 16mm film-lending libraries in 83 colleges and universities and concluded that the most important factor in the growth of the departments was that of the personal leadership characteristics of the personnel. Wait (161) studied effective administrative patterns in eight selected teachers colleges in the United States and also found leadership to be the most important factor in the program's development, with a direct administrative channel to and from the office of the president an important influence.

The NEA survey (109) disclosed that two-thirds of the districts had AV materials centers but only one-quarter had central AV departments, and that AV equipment per 10,000 students had more than doubled and materials, such as films and filmstrips, had more than tripled in the eight-year period. The Indiana School of Education (124) recently published the proceedings of an important school building planning conference in which specifications for classroom light, sound, and thermal control were spelled out in detail. Blake (16) studied previewing practices and preferences by AV directors and educational film producers and suggested a number of recommendations as general previewing conditions.

The NEA survey (109) pointed out that building coordinators are appointed in about three-fourths of the schools, but one-third of these coordinators are given no free time during school hours for the responsibility and over one-half of the coordinators are given less than half-time. In almost one-half of the districts inservice education programs were available. Meiser (100), analyzing why Grade V and Grade VI Indiana teachers took little or no advantage of available AV facilities and services, found greater use associated with teachers who projected films in their own classrooms, ordered films shortly before time of use, had taken AV courses, prepared some of their own materials of instruction, and used democratic teaching practices in their classrooms. Guss (47) studied film evaluation and selection procedures in 12 universities and colleges and made recommendations for improvement. Hyer (67), studying possible

deterrents to film use in Rochester, New York, high schools, reported that the AV coordinator played an important role in the AV program and that teacher inertia was one of the outstanding deterrents to film use. The NEA survey (109) showed that financial support for AV education had about doubled during the eight-year period. However, it was still only 65 cents per pupil enrolled, exclusive of salaries.

Conclusion

No review of AV communication research would be complete without at least some cursory attention to a few of the contributions that are influencing the development of communication theory and the direction of the research in the field.

Reports and discussions of wartime research (45, 64) led to important studies during the past decade and the organization after the war of two significant AV research programs: the Instructional Film Research Program at The Pennsylvania State University (24) and the Audio-Visual Research Division of the Air Force Human Resources Research Laboratories (91), now the Training Aids Research Laboratory of the Air Research and Development Command. Papers by Church (29), Kendler, Kendler, and Cook (80), and Smith and VanOrmer (133) applied the implications of learning theory and the perceptual aspects of communications to the design of AV materials. Carpenter (22) and McCoy (93) integrated the findings and implications of research with respect to the logistics of training films and film production.

Stimulated in part by Wiener's concept of cybernetics (163), Shannon and Weaver's mathematical theory of communication (125), and Korzybski's semantic principles (82), progress has been made in the construction of a general theory of communication. This theory development has important implications for AV production and utilization; an improved understanding of the processes of communication should result from better theory construction. Osgood (111) developed a measure of meaning, called the "semantic differential," which could be used to specify the meaning of particular concepts to particular individuals. Communication models were constructed by Schramm (123) and Westley and MacLean (162), and Gibson (45) worked out a provisional theory of pictorial perception. Suggesting that an examination of the concept of "freedom" might lead to a generalized theory of communication, Harwood and Cartier (53) presented an overview of the many approaches to the study of human communication. In the area of analysis of communication content Berelson (15), Lasswell and Leites (88), and Smythe (134) made important contributions. Hovland, Janis, and Kelley's recent book on *Communication and Persuasion* (63) made important contributions to the psychological study of opinion change by persuasive communications. Allport (6) made a critical analysis of the theories of perception and presented his own "dynamic-structural" theory of behavior, and Katz

(77) studied the part that the personal influence of people played in the flow of mass communications.

In summary, a vast amount of research has accumulated during the past 30 years, demonstrating conclusively that AV instructional materials, properly used, can make significant contributions to learning over a wide range of conditions and subjectmatter content. Along with this empirical research has come the development of theory regarding the impact of instructional and persuasive communications and an increasing knowledge of the relationships of audience characteristics to the influences of these communications.

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CHAPTER III

Community Resources

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THE clue to the use of community resources lies in the connotation and denotation the term has for the user. With that thought in mind, the reviewers sought to synthesize the findings of selected research, the central ideas of scholarly studies, and the emphases in current reports of action research and educational undertakings in such a way as to throw light upon the educational values and challenge of community resources.

Defining Community Resources

There was a time when the accepted, acceptable, and understood meaning of the term *community* was a place—a geographical location with fairly well-defined boundaries—where people lived together and reared their families with the feeling of some degree of permanence. Communication thru manifold face-to-face relationships, mutual interests and aspirations, and common necessities bound them together. The community, if it were a "good" community, according to the late J. K. Hart (28), had integration or integrity, form or organization, a real content of culture and creative life, a boundary or limitations, a sense of direction: It was going somewhere. A man identified himself with *the* community; he knew where he was from.

Today, with the industrial revolution an accomplished fact and the revolution of consumption well under way, the matrix of community feeling has changed. A man may identify himself with, and serve, many communities (56); or, amenable to no form of social control, he may serve none (71).

Several writers (11, 65, 69) have viewed the decline of small communities with regret and at the same time have pinned their faith on the renascence of small communities. Whether it be "Melby's dream" or Clark's conviction that schools can raise the level of living in the community, the faith has been sufficient to enlist the financial aid of great foundations to prove the faith and point direction. The focus of experimentation has been on some one of the aspects that characterized the vigorous small community; for example, on the basic essentials such as food, shelter, and clothing (65, 76); or on the cooperative efforts of the people themselves thru fact-finding research, discussion, decision, and action (26, 68, 75).

Current Interpretations of Community

From the identification of a community with a specific geographical locality, the emphasis has swung now to people. A community is people.

True, there are the institutions the people have created or received as their heritage, but essentially the community is people (66). According to Brownell (11), a community is a group of people who know one another well. It is a rather small group, diversified as to age, sex, skill, function, and mutual service, that has a sense of group identity or solidarity. When an aggregation of people with common concerns or goals form warm, friendly relationships, engage in activities, interact, and develop norms, groupness develops; they become a community (35).

The report of the Educational Policies Commission (56) states that a community refers not only to people but also to the network of relationships and social structures which characterize their living together. As the relationships change, the community changes; as the relationships become fixed, the community takes on stability. The boundaries may be uncertain, but the center, whether it be a neighborhood, a voting district, an incorporated town, or the attendance area of a school, will be the site of direct human relationships.

Resources: Expanding Concepts

The term *resources*, like the term *community*, has acquired functional meaning. The view once prevailed that all resources were static, a fund that could be drawn upon until exhausted. When national leaders grew alarmed at the rapidity of depletion or near depletion of many of the natural resources necessary to the life of the nation, the idea of conservation—even of hoarding—with the accompanying practice of inventorying, took hold. Then came the aftermath of World War I and the depression. The President's Research Committee on Social Trends made its report (70), making clear that out of deficiencies rise problems involving the resources of the nation. Zimmermann (89) declared that resources are inseparable from man and his wants and that they are the environment in the service of man. What makes a resource is man's use of it. As the functional concept of resources prevailed, the idea of wise use of resources became the accepted meaning of conservation and was widely discussed (1, 6, 7, 21, 30, 80, 82).

Community Resources

It was logical that, once the functional concept of resources was accepted, the simple classification into human and natural resources would be expanded to include institutional and social resources (63, 80) and the meaning of human resources to include the psychological as well as the social (16, 25, 80). If the community is people, then what people are, what they think, what they do, and how they act alone and collectively provide clues to community resources (72, 73). Clapp (16) detailed the resources which children and their families used daily as they lived. She saw as their resources (a) such psychological aspects as their abilities, capacities, skills, relations with others, and their hopes and aspirations; (b) such social realities as the folkways, cultural heritage, and traditions

of their community; (c) such material resources as the actual tools and physical features in their environment; and (d) such institutional resources as the school, places of recreation, and the church. The National Society for the Study of Education (59) suggested some of the contributions people in the community might make to the school program and some of the ways the school might use the community agencies and institutions. Moffatt and Rich (52) analyzed the place of local history as one means of enriching the school program. Rugg and Brooks (73) emphasized the value of human experience as a resource. Grinnell and Young (25) recognized a trend toward greater employment of community resources: Children were being taken out of buildings to see, hear, and handle things; problems and persons having particular information were being brought into the classroom.

The central role of communication in developing community life and furthering human endeavors has led investigators increasingly, as the individual, the small group, the community, and the nation have experienced threat, to study the nature of communication as well as the nature of group process and group dynamics. Important analyses and studies have appeared. Volumes by Hovland, Janis, and Kelley (37) and by Schramm (74) consider psychological aspects of communication and persuasion. Cartwright and Zander (13) analyzed group process, and Benne and Muntyan (9) and Sharp (77) pointed out the relevance of a group-process point of view to curriculum change. Closely related are discussions of the nature, needs, and development of the self, such as those by Hopkins (36), Jersild (41), and Murphy (54), and of the varying effects of social controls upon personalities such as that of Riesman and others (71). Lynd and Lynd (45, 46) and Warner and Lunt (86) have documented the nature and complexity of the larger community. These approaches to the psychological and social aspects of man in his environment all serve to indicate the difficulty, if not the impossibility, of defining community resources except in relation to a given group, with given perceptions, in a given situation, at a given time. A human resource is a complex potential. Science has revealed that a natural resource is, too; even physical objects change in meaning as different individuals or groups use them. Community resources, therefore, are complex potentials, as challenging as man himself in his universe. Furthermore, education itself is not static, but is affected by many social forces (5); therefore, a static blueprint for the use of community resources would have little value.

Using Community Resources

The development of the community school—both the concept and the actualities—provides data for understanding community resources. When educational leadership began to relate the learner to his environment and the school to the community, the development of the concept of the community school had begun. Progress toward implementation of the concept

may be studied in the continuing flow of published reports of experimentation in classrooms, in schools, in metropolitan areas, in states, and in regions. Who can say with certainty just when and where it began? If one has known the little red schoolhouse, he may reflect with nostalgia upon its excellencies and mark the beginning there. If one has participated in an experiment to improve the quality of living in a community or in the renascence of a small town thru the concerted efforts of its people, one may feel sure that the beginning lies there.

Yet who can deny, no matter what his experience has been, the power generated by such reports as Everett's *The Community School* (22) in 1938, Clapp's *Community Schools in Action* (15) in 1939, *The Sloan Experiment in Kentucky* (76) in 1944, Olson and Fletcher's *Learn and Live* (65) in 1946, *Education for Citizenship* (50) in 1949, Poston's *Small Town Renaissance* (69) and the Southern States Work-Conference report entitled *Learning by Living* (80) in 1950, Olsen's *The Modern Community School* (64) and Polley and others' *Community Action for Education* (68) in 1953, and Seay and Crawford's *The Community School and Self-Improvement* (75) in 1954. In addition, two yearbooks of the National Society for the Study of Education (58, 59) gave important statements of criteria, procedures, and practices.

These serve as the documentation of a trend. A similar documentation of the evolving concepts of the community school may be found in *The Modern Community School* (64: 189-200). Altho the term *community school* may seem to be ambiguous, as Hanna and Naslund (27) indicated, nonetheless, one characteristic seems to denote it today. Motivated by the conviction that the function of education is to improve the quality of living, the community school designs, activates, and evalutes its program with a view to community improvement (60, 61, 72, 88). Characteristic of the community school is its use of a variety of approaches based on the findings of research, and its exploration of emerging ideas thru action research (18). Hanna and Naslund (27) offered a definition of the community school, presented criteria for identifying and measuring it, and suggested ways of implementing the concept. Central to their definition is the school's role in the direct attack on the needs and problems of the total community as well as on the problems and needs of the students. In the final analysis, the community school is a unifying force of the community, not merely a social institution in it.

The impact of the community-school concept and the significance of community resources have contributed to the development of expanding concepts of curriculum (3, 4, 25, 40, 57, 84) and of ways of effecting curriculum change (9, 77). The core curriculum (23, 62, 84), ideally implemented, is essentially small communities of children and youth in action: The members of these groups know each other well, are bound together by a network of human relations, identify problems, engage in research to solve them, use a variety of resources in their environment, come to decisions as to action, and evaluate the results.

Approaches

Approaches to community resources are related to the needs and the goals of the groups involved; the procedures employed are related to group decisions; and the principles or criteria for further operation are related to the evaluation of the experience involved in action and the results obtained therefrom. For example, an individual teacher, or a staff, felt the need for readily accessible and current data (instructional materials) on current problems; resource units were developed (23: 137-44). A school became interested in its history, involved the current school population and distinguished graduates older than the children's parents in the search, and shared with its community the findings which illustrated the development of the total community (78). The listening ear of a teacher sensed a conflict in human values among a group of children over the merits of certain popular songs; finding and sharing the favorite songs of each child's family formed the nucleus of a project involving the children's community, especially their families; dignity was restored to some of the group; interpersonal relationship improved both in the class and in some of the families (14). What youth thought about themselves and their situations in the days of the depression became the subject of a survey (8). It was followed in succeeding years by such programs as the Community Youth Development Program (31) and such proposals for structuring the curriculum as meeting the needs of youth (57). Professional journals selected community study for better living and wise use of resources as the theme for complete issues, collecting and making available practices geared to those goals (38, 53). To sensitize preservice teachers to the nature of a school community in a large city, a teachers college sent them into the community to participate in the school and community with pupils, teachers, parents, and other citizens who had prepared to receive them and work with them; as a result, all involved saw the community in a different light (26). A state board of conservation, aided by research laboratories of a university, channeled to the schools timely scientific data on a natural resource problem of immediate concern (83). Ways of dealing with intergroup tensions were the subject of a study of national significance (85).

Other studies and analyses briefly reported in professional journals indicate that attitudes are resources in the sense of dynamics in a situation (2, 47, 48, 79) as well as materials of instruction (49). The "slant" of instructional materials was regarded as evidence of an attitude, and the students' need to discuss such materials as one basis for developing the attitude of free inquiry was defended by Wronski (87). Assuming that it is possible to measure change in attitudes toward self, others, social justice, democracy, and choice of friends, Hill (33) tested the hypothesis that the organized study of Warner's theory of social class at the high-school level is a useful tool for improving attitudes toward self, others, social justice, and democracy. He used three experimental and three

control groups in Grades IX, X, and XI, matched with respect to occupation of guardian, source of income of guardian, type of house lived in, area lived in, mental ability, chronological age, and sex. Thru the use of Warner's *Index of Status Characteristics*, each pupil was assigned a place along the social status continuum. For six weeks the experimental groups studied a unit on social class, using as the basal text material Warner and Warner's *What You Should Know about Social Class*, and the control groups continued with their usual program. Differences in means on various attitude tests were tested, and it was found that in no case did the experimental groups benefit more than did the control groups. Hill concluded that factors relating to the individual teacher and not included in the analysis may have had an effect, that social class units with the content and approaches used in the study described were not suitable for high school, and that the bias detected by the students in references included in the selected basal material was a factor needing further study.

Resources Produce Resources

The discovery of community resources by teachers, the relating of their use to the various phases of the school's program, and the production of instructional materials concerning local resources by teachers for use in the schools have been the major aims of many undertakings by professional groups. Descriptions of a few of these undertakings are presented to illustrate the principle that resources produce resources.

The Teacher Summer Camping Study, Bangkok. In March 1953, 156 elementary-school teachers from nine selected elementary schools cooperating in the Bangkok Pilot Project (Thailand), which is jointly sponsored by the Ministry of Education and the International Cooperation Administration, camped for one week in Arng Sila, a district with a variety of natural resources. The purposes of their camping together were: (a) to gain firsthand experience with the resources available in the district, (b) to learn democracy by living together, and (c) to make use of the summer vacation. To achieve the first purpose, the group decided to study the chief industries which derived from the resources of the community. Ten interest groups were formed to study 10 major industries: (a) the shallow sea fishery, (b) the fish soya sauce factory, (c) the salt field factory, (d) a poultry farm, (e) sugar cane growing, (f) pineapple growing, (g) a tapioca plantation, (h) the tapioca flour mill, (i) cloth weaving in a home factory, and (j) duck raising.

The members of each group spent the day in such functional activities as interviewing appropriate citizens, observing, participating, reading, photographing, drawing, and recording. In the evening, they joined a seminar to discuss, share, and interpret the results of their day's activities. One month after the camping experiences, each group submitted to the steering committee a manuscript on the industry studied. Written by the teachers, the manuscripts were designed to be read by children at selected grade levels. The steering committee edited the manuscripts and had them

mimeographed for use as supplementary readers in the elementary schools of Thailand, with a view to printing them after they had had a trial run in the school.

Pinellas Resources. The supervisory staff of Pinellas County, Florida, became resource-use conscious in 1945 and at the same time aware of the need to acquaint the teachers and administrators with the variety of natural, human, and institutional resources of the county as one means of aiding them in utilizing some of the county's problems in the instructional program of the schools (67). The county board of public instruction agreed to pay for a workshop to be directed to the study of the county's resources and the production of a written report for use in the schools and in various adult education classes and clubs. Three months before the beginning of the workshop, the curriculum committee composed of a cross section of the teaching, supervisory, and administrative personnel undertook to design the general plan for the study with the assistance of a director chosen from the staff of the state university. They selected for study the following areas: history of the county, including legends and remnants of the cultures of other peoples inhabiting the region; geographical features, including geological history; flora and fauna; population characteristics and trends; social and constitutional resources; occupations; industries; and trends. They invited citizens to contribute by consenting to interviews and permitting the study of old records, family histories, and collections. They utilized the resources of state universities and local, state, and national governmental agencies for consultative services, and they used the resources of the local technical training school for the printing of the report. At the state level, in a somewhat comparable manner, the Florida State Department of Education (7) developed a textbook on the resources of the state.

Field Trips

Since the Dale, Finn, and Hoban analysis (20) of the field trip as an instructional technic, in which they found the activity to be of considerable value, little recent experimentation has been conducted. From a questionnaire study of students in Grades VI, IX and XII in Detroit to discover what places in the community they had ever visited and with whom, Collings (17) concluded that: (a) teachers cannot assume that students have had large numbers of these experiences, (b) schools are not making sufficient use of community resources, (c) the most direct experiences are being provided by the home, (d) church and club groups provide very few such experiences, and (e) students have had most experiences with recreational and cultural activities and fewest with governmental activities. Curtis (19) demonstrated the value of the excursion as a summary device in teaching conservation to Grade V pupils. Harvey (29) found that the use of field trips with Grade IX general science classes studying a unit on conservation significantly increased the development of scientific attitudes and added a new fund of factual information. Helliwell (32) com-

paring the use of filmstrips with field trips in teaching factual knowledge about the dairy and how a newspaper works, found the field trip to be significantly more effective, and the addition of the filmstrip to the field trip experience even more effective.

Experimentation Designed To Improve Community Living

Three types of experimentation have been designed to test hypotheses with respect to the school's role in improving living in the community. The school is here used to mean a local school, a university, or both. The first type, exemplified by the Sloan experiments in applied economics, tested the hypothesis that the school by changing one factor in its program, the kind of materials of instruction in the area in which improvement is desired, can raise the standard of living in the community served by the school. The second, exemplified by the Montana Study, tested the hypothesis that citizens of a declining community with the assistance of competent consultants from a university, thru directed study, research, discussion, decision, and action can generate a rebirth of the community. The third, exemplified by the Bronx Park Project, tested the hypothesis that thru administrative cooperation ways and means can be found for developing a sense of community in an area of a great city, discovering lay leaders, and promoting creative relationships between the schools and the people they serve.

Sloan Experiments

The Sloan Experiment in Kentucky (76), carried out under the leadership of Maurice F. Seay at the University of Kentucky, was an attempt to improve the dietary practices in selected communities thru the education of the children. Together with the experiment in housing education at the University of Florida (65) and the experiment in clothing education at the University of Vermont (65), it is well known. However, because these experiments contributed to the conviction that schools can improve living in the community, a major aim in the use of community resources, some details of the Kentucky Experiment are presented.

Five major assumptions underlay the Sloan Experiment in Kentucky: (a) school programs which emphasize community problems are effective even for teaching the skills; (b) if children are to receive the ultimate benefits from a program of education in community problems, instruction should begin in the first year and continue thru the period of schooling, and all children should be taught, as early as possible, the resources available for solution of their problems; (c) only one economic problem should be selected for special emphasis in the experimental school curriculums; (d) the accomplishment of desirable changes probably require a number of years since dietary practices change slowly; and (e) recruiting and utilizing local resources and abilities should contribute to the success of

the experiment. The administrative plan adopted for the experiment is an example of the use of community resources. The Bureau of School Service of the University of Kentucky became the administrative agency of the experiment. Cooperative relationships were established early with various local, state, and federal agencies interested in community problems. A panel composed of representatives of the agencies assisted in deciding upon matters of policy, such as direction and method, and in establishing cooperative relationships.

Experimental and control schools were chosen in localities of low income and poor dietary practices. The educational programs of the experimental schools were changed in only one respect: Especially prepared instructional materials relating to diet were made available, together with printed suggestions as to their use. The materials, for the most part prepared and illustrated by either teachers or other persons familiar with the lives and interests of the children, were designed to parallel, not to replace, the adopted state textbooks which were for the most part the only instructional materials used in the school. No changes were made in the programs of the control schools. The three types of measurements used were: (a) tests to determine the pupils' intelligence, achievement, and attitudes; (b) examinations to discover the pupils' state of health; and (c) checks to determine the dietary habits of the communities. From time to time, the tests, examinations, and checks were made in both the experimental and control schools. The improvement in the experimental schools and their communities was sufficiently encouraging to give credence to the conviction that schools can thru the education program make a difference in the quality of living of the communities they serve.

Montana Study

The story of the Montana Study was told by Poston in *Small Town Renaissance* (69). It was used also to illustrate a theory in *The Human Community* (11) by Brownell, who directed the study. The purpose was to find ways to enrich the quality of living in Montana. The major hypothesis was that a research project in the humanities could contribute to improving the lives of people in small communities. *Humanities* was used to mean any worthwhile human activity which falls within the course of day-by-day living. The design of the study was to assist interested leaders and people in a community to organize in study groups over a period of 10 weeks and use a study guide as a basis of discussion of the people, the economic aspects of the community, the relation of the town to the state and the state to the nation, the outlook for the state and for the town in relation to its people, and how to make life better in the community. Groups studied the history of the community; economic conditions with respect to production and consumption of goods and services produced in the community and goods and services produced elsewhere; seasonal activities in field, shop, and home; and names of individuals and families leaving the community and reasons for their leaving. Emphasis was laid on how

to make life better in the community thru such expressive arts as music, drama, poetry, dancing, and arts and crafts. After the study period, groups were encouraged to take action to carry out the recommendations of the committees.

The Bronx Park Project

During a period of three years, the Bronx Park Project (68) attempted to answer two questions: (a) What degree of local autonomy for relatively small population groups within large city school systems is needed to provide a productive relationship between school and public? and (b) Is it realistic to hope that the public and the school staff will embrace an opportunity for exercising local autonomy? Central to the undertaking was the need to discover what, if any, were the areas of interest to the community and then thru action of a lay committee to develop recommendations and the possibility of carrying thru the recommendations within the range of local administrative discretion. Four stages marked the development of the project. In the initial stage, a survey of the resources and interests of the community was made, followed by a census of community groups and "unmet-needs" conferences. In the second stage, two advisory councils composed of emergent leaders were established to work with the two independent local administrators of the schools; study groups on community problems made proposals which, together with proposals from other groups and individuals within the schools, were channeled thru the advisory councils. A steering committee disseminated research materials and worthwhile practices within the schools. In the third stage, a joint committee of the two advisory councils drafted a code establishing the degree of local autonomy they desired for the community. In the final stage of the project, the joint committee of the advisory councils concluded that further work and study would be needed to achieve local autonomy and initiated a limited plan of local autonomy to continue so far as possible the special arrangements under which they had been operating. The project demonstrated the usefulness of new technics derived from research and made use of the talent, initiative, and resourcefulness of thousands of the people of the community.

Communication and Resource Persons

Recognition of the significance of community resources in the functional sense has had its impact upon the study and development of technics and procedures. The use of resource persons (9, 25, 51), the workshop way of working (43), discussion and discussion technics (12), and the evolution of the case study as a method of instruction (39) have been among the instructional procedures, or the aspects of instructional procedures, analyzed and studied.

The use of resource persons is a widely accepted practice. The role of communication in affecting the development of community feeling and of groupness has received attention for a number of years. Within recent

years research directed toward the *credibility* of the communicator has been reported. Hovland, Janis, and Kelley (37) and Schramm (74) reported the findings of a number of studies. The following, among others, have implications for the selection and use of resource persons in problem situations: (a) Expertness and trustworthiness affect recipients' evaluation of a communicator's presentation, arguments, and appeals. (b) When a communication comes from an unknown or ambiguous source, acceptance will be increased if, at the beginning, the communicator explicitly states that his position is in accord with that of the audience. (c) Recipients' evaluations depend not only upon the content of the communication but also upon the amount of conflict between the initial bias of the recipients and the avowed intention of the communicator. (d) Older persons tend to be more influential than younger ones; peers or slightly older children tend to be more influential than adults.

Conclusion

The selections and emphases which form the bases of the foregoing review, represent the perception of the reviewers at a given point in time under the compulsion of the acceptance of the assignment to produce the synthesis. In essence, the points of view, practices, syntheses, experimentation, and findings were community resources used by the reviewers. From the materials presented in the references and from many other sources not included, another reviewer might have presented a different synthesis. In so doing, he would become involved in the very dynamics that characterize community resources.

To the reviewers, further research seems to be needed in the *use* made of community resources, particularly if human personality is central to the development of democratic values. So long as the problems indicated by Hollingshead (34), Riesman and others (71), and Stanley (81)—to name only a few—persist, education has a major task. Perhaps new technics of research are needed as Murphy (54) indicated. Certainly, the resources of present research are ample for the foundation of new creations, for, as Murphy indicated, the new will rest upon what is now known.

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CHAPTER IV

Free and Inexpensive Materials

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SEVERAL terms are commonly used in discussing "free and inexpensive" materials. In referring to such materials, Briggs (2) classified them with "supplementary teaching aids," Groneman (7) included them in a list of "teaching aids," Harrington (8) used the term "source material," Keeley (13) used the category "other instructional materials" in which he gave attention to free and inexpensive pamphlets, and Marcus (16) discussed "fugitive materials." However, the terms *industry-sponsored*, used by Netzer (22), and *business-sponsored*, used by Sinclair (27), begin to draw a distinction between "free" materials and "inexpensive" materials. The terminology employed by Netzer and Sinclair refers to those materials furnished to schools without cost for single items or for a nominal cost for quantity orders. The inexpensive materials also include items such as the 5-cent newspaper and the 25-cent pamphlets and charts developed by organizations like Science Research Associates or government bureaus. The wide publication and use of paper-bound editions of classics and technical books probably will add a new category to inexpensive materials.

This chapter will report research which deals with free and inexpensive materials being furnished schools regardless of the term used by the research worker to identify these materials. Materials include such items as pamphlets, books, maps, charts, posters, pictures, newspapers, magazines, films, and filmstrips.

Use of Free and Inexpensive Materials

The early and continuing, but decreasing, concern about the imperfections and propaganda in free and inexpensive materials has not deterred teachers from using them. Stark (29) found that of the home economics teachers participating in her study, 21 percent used such materials "nearly always" while 63 percent of the group used them "frequently." Netzer (22), in her study of the use of industry-sponsored materials in city public schools in Wisconsin, found that of 261 teachers participating in the study, 97 percent used such materials. Nelson (21), in a nationwide study of 626 school systems in 48 states, found only one school system that did not use sponsored instructional materials.

Interesting information is also available on the grade levels and subject-matter areas in which free and inexpensive materials are most frequently used. In the 1946 study of audio-visual education in city schools made by the NEA Research Division (19), it was found that elementary-school teachers and senior high-school teachers used more audio-visual materials

of all types than did junior high-school teachers. In the school systems of over 30,000 population, more materials were used by the elementary schools than by the secondary schools, but this situation was reversed in the schools in cities under 30,000 in population. It is interesting to note that in these city school systems such materials were used by decreasing numbers of teachers in the following areas: social studies, science, health, English, safety, music, art, practical arts, physical education, and mathematics. Fulkerson (6) reported from his study of the use of audio-visual materials in public schools of Southern California that, with the exception of first-grade teachers, intermediate-grade teachers tended to make greater use of charts, posters, and still pictures than did other teachers.

From reports by business and industry come further data on extent of use of the tremendous quantities of free and inexpensive materials distributed to the schools in response to teacher requests. Wayne University (33) reported the distribution of 175,000 packets of Automobile Manufacturers Association materials in a five-year period. Sinclair (27) reported that of the manufacturers in his study responding to a question concerning the average number of requests they receive per week from schools for materials, one reported 1601 to 1700; one, 1401 to 1500; one, 1301 to 1400; one, 1101 to 1200; one, 901 to 1000; and one, 801 to 900. Other companies reported 20 to 200 requests per week.

In 1930 Stark (29) found that the advertising materials used most frequently were posters and charts, booklets, samples, advertisements in magazines, and slides, in that order. She also found that these materials were used in such ways as: on bulletin boards, in the hands of individual students for study purposes, by the teacher, by a commercial representative for demonstration, and by the child at home. Wright's study (35) revealed that of the elementary schools reporting, 68 percent used posters, charts, diagrams, and graphs and that they used the materials an average of 32 percent of the time; 54 percent of the schools reporting used photographs, averaging 14 percent of the time, while 5 percent of the schools reporting never used photographs. Koon and Noble (14), surveying use of audio-visual materials in 8806 school systems, found that wall maps were used more extensively than any other type of audio-visual material, charts and graphs were second, and posters and cartoons were third. Tucker (31), investigating the utilization of community resources by teachers in Oklahoma, found wide use of locally published materials such as newspapers, leaflets, pamphlets, and magazines.

Sinclair (27) found that educators often requested materials of a certain type, not because they preferred that form but rather because that was what happened to be available. Business, in turn, produced materials in certain forms because of the demand for them. In this study, 78 percent of the educators indicated that teachers' manuals appealed to them to some degree, but only 8 percent named such manuals among their first three choices of types of materials preferred. It was discovered that among forms of available business-sponsored materials, the preferences of the

teachers responding were for motion pictures, filmslides, and booklets, in that order.

These investigations underscore the importance of Sinclair's emphasis upon the desirability of business and industry cooperating with teachers from the time of initial planning of materials to be used in schools.

Use in Teaching Propaganda Analysis and Critical Thinking

Advertising and other propaganda in free and inexpensive materials has long been of concern to school people. Many have considered this feature of sponsored materials to be their most serious handicap. Some have turned an apparent liability into an asset by utilizing biased materials in the teaching of propaganda detection and the critical weighing of ideas, and most teachers have shown an awareness of the problem. Patterson (24) pointed out the dilemma facing the educator who wished to use a variety of additional materials but was confronted with the fact that most sponsored materials appeared to be designed to develop a certain commercial or ideological bias in the minds of the readers. Michaelis (17), as well as Briggs (2), emphasized the extent to which straight sales and promotional materials were used without attention being given to the allegedly educational purposes for which these materials were prepared.

Parker's article (23) is representative of the point of view that insists that students must be trained to think for themselves, weigh evidence, and make decisions, and that advertising materials prepared to propagandize may be used instead to educate pupils to make thoughtful choices. Netzer (22) reported that a large number of superintendents and teachers felt that industry-sponsored materials ought to be used so that students will recognize distorted and restricted materials.

Problems in Using Business- and Industry-Sponsored Materials

The problems teachers see in using these materials may be divided roughly into two categories: (a) problems of securing and maintaining materials and (b) problems of using materials in teaching.

Securing and Maintaining Materials. Jensen (12), in a study carried on thru questionnaires distributed to faculties of 17 schools located in various areas of California discovered that 39 percent found the materials difficult to obtain; 33 percent reported storage problems; and 15 percent said ordering, using, and maintaining materials was difficult. Jensen (12), Netzer (22), Roberts (26), and Sinclair (27) are among those who found that teachers generally do not know the sources of materials. Marcus (16) indicated that teachers in the school where he did his study on the use of a materials-resource consultant for the core program lacked familiarity with basic procedures and skills needed to locate resources, had not devised a plan for stockpiling and caring for materials, and had failed to keep

records of evaluation of certain materials so that other teachers might build upon their experience. Netzer (22), from interviews in 30 selected school systems in Wisconsin, reported that the unawareness of the availability of industry-sponsored materials and the extra time necessary to locate, secure, and maintain them were important factors operating against their use in the schools. Thirty-one percent of the teachers participating in the study expressed the feeling that the extra hours needed to gather and care for materials as well as the teaching time needed to utilize materials were influencing the use of industry-sponsored materials.

Using Materials in Teaching. Jensen (12) reported from his work in California that 33 percent of the 285 teachers participating in his study needed more materials to use with average students, 31 percent found planning the use of free and inexpensive materials difficult, 15 percent had problems in measuring student progress accurately when using such materials, and 17 percent indicated that the use of such materials makes the teacher feel insecure. Beginning teachers suggested to Netzer (22) that they intended to use a textbook for the first year or so, until they could gradually learn more sources for other materials or until they could find more time for organizing the use of additional materials. Hillis (9) indicated that research workers for the Sloan Foundation reviewing the free and inexpensive materials available on diet found they contained accurate and valuable information. However, few were suitable for use in elementary schools or in the community where the experimental schools were located. Vocabulary was technical, sentences were too long and involved, and illustrations were meaningless to people in the communities involved. Roberts (26), in a study in which 165 questionnaires were returned from schools and school districts in Illinois, exclusive of Cook County and Chicago, found that the teachers' lack of training in finding sources of materials, as well as in using machines, limited the use of a variety of materials in the classroom.

Nelson's study (21) conducted by questionnaire to 3120 superintendents in communities of 2500 population or more, with more than half the superintendents reporting, showed that, altho 9 out of 10 teachers use sponsored materials, history teachers found more difficulty in locating satisfactory materials than did other teachers. Three out of 4 social studies teachers felt that sponsored materials erred by having a vocabulary and reading level higher than the student's ability, and 4 out of 5 felt there was inadequate consideration of student interest.

Wronski (36), in a study conducted during the school year 1948-49 to learn whether or not social studies teachers use government publications, sent 1000 questionnaires to members of the National Council for the Social Studies, members of various regional social studies councils, and a select group of social studies teachers in Minnesota. His study revealed that the degree to which social studies teachers used government publications in their teaching correlated positively with the amount of money the school spent in purchasing such publications, the amount of advanced education

completed by the teacher, and the extent to which the teacher's major field of study was the social studies rather than other fields. The study also disclosed interesting data on class size which indicated that teachers with the smaller classes (15 to 20 students) used the fewest number of publications, and those with classes between 20 and 30 pupils used more publications than those having still larger classes. An analysis of other important factors which might influence the wide use of a variety of materials, such as size of school district, special personnel available to work with teachers, amount of school budget, and type of curriculum was not reported. This analysis would be especially interesting for those schools where teachers had small classes but used few teaching materials.

Administrative Policies Regarding Free and Inexpensive Materials

When business- and industry-sponsored materials first began to appear in schools as supplementary teaching aids, they were generally designed to advertise a particular product to adults. However, Stark (29) in 1930 learned in a national survey of home economics workers that 72 percent of those replying to the questionnaire believed this advertising matter was providing teaching materials that could not be had in any other way. Stark's study was later published by the Association of National Advertisers (30).

The apprehension of educators that many of the materials constituted the poorest kind of propaganda for a product or industry and that the vocabulary and organization were not suitable for the groups with whom they were being used caused the National Education Association in 1929 to appoint the Committee on Propaganda in the Schools. This group (3) reported only four states restricting the use of advertising materials in the schools. In Addicott's study done in 1939 and reported by Kramer (15) only Rhode Island and North Dakota regulated by state law the distribution and use of printed advertising materials in classrooms. When Kramer conducted his study in 1950, he found thru correspondence with all state superintendents that no state had laws regulating the use of such materials. Some states, such as Connecticut and North Dakota, were found to issue periodically, for distribution to their school staffs, lists of acceptable free and inexpensive materials.

As states have moved away from establishing restrictions on the use of free and inexpensive materials, local school districts have tended to establish regulations governing the use of such materials. In a 1942 study of state laws and local regulations governing advertising in the schools, Harrington (8) reported that Knoxville, for example, restricted the use of material on which the name of the company was so prominent that the material was judged to be advertising. This school system had provided for the appointment of a teachers committee by the superintendent to make decisions when questions arose. Sinclair (27), in a nationwide study in which 625 teachers and administrators replied to a questionnaire and

2500 teachers and administrators were interviewed over a two-year period, reported that the majority of schools did not exclude any type of instructional aid. He learned, also, that those which did so, operated under restrictions aimed primarily against any aid that had more value to the sponsor than to the child, was designed for sales promotion or ideological indoctrination, or was deemed to be pure propaganda.

Kramer (15) found in 1950 thru personal letters to the 50 superintendents in the largest cities of the United States that, altho some cities had regulations concerning the use of free and inexpensive materials, none banned their use. In the same year Keeley (13) found from examining 185 questionnaires returned from high-school districts that there were no policies established in 35 percent of the responding schools for the selection of free and inexpensive pamphlet materials. Thirty-seven percent of the schools participating in the study allowed each teacher to select whatever he wished; in 19 percent of the schools teachers cleared with the principal, supervisor, or curriculum worker, usually if some cost were involved; and 8 percent used a committee to approve pamphlets for use in the classroom. Nelson (21) directed questionnaires to 3120 superintendents in places of 2500 or more population. Seventeen percent of the schools said they had regulations excluding the use of free materials, but Nelson found no evidence that they actually practiced such exclusion. About one-half of these superintendents reported teachers committees assigned to review materials, but Nelson believed many committees were not functioning.

A conclusion that emerges is that we have experienced a transition from state to local control of free and inexpensive materials for classroom use, and that generally teachers are now the ones responsible for the exclusion of any such materials that do not find their way into the schools. Sinclair (27) reported that 337 school administrators and 289 teachers cooperating in his study barred materials from the classrooms for the following reasons: advertising dominant, propaganda, ideological indoctrination, biased, unreliable, of little educational value, difficult for children to understand, cheap or lurid in appearance, cigarette or tobacco sponsor, liquor or beer sponsor.

Provisions for Selecting Materials

As is true in the case of exclusion of materials, the closely related matter of the selection of free and inexpensive materials for use in classrooms has undergone an interesting transition. In the study cited in a previous section of this chapter, Kramer (15) learned from 34 replies to letters to superintendents in the 50 largest cities that only two of the cities replying had schoolboard policies restricting the use of free and inexpensive materials. This type of "top-level" fiat seems to have been replaced by administrative regulations established by administrators, supervisors, principals, and teachers working together. The National Education Association's Committee on Propaganda in the Schools (3) indicated that

large systems tended to have more rules in regard to selection of materials than small ones. This may be because the larger systems are more complex and the rules serve to communicate policies which in smaller systems might be communicated in other ways; it may mean that the larger systems, with more supervisory and administrative personnel, have more opportunity to develop policies and to enunciate and communicate them.

Kramer (15) described three major plans now being used to evaluate and select free and inexpensive instructional materials: (a) an administrator or staff officer selects the materials, (b) individual teachers select, and (c) a committee selects. He showed a growing trend toward use of committees in evaluation and selection procedures. Netzer (22) found that in Wisconsin schools participating in her study, teachers were generally responsible for selecting their own free and inexpensive materials and that where district regulations existed they related only to display advertising materials. Teachers reported that many materials never reached them because they were discarded in the superintendent's office and indicated that administrative red tape is a form of censorship. The Philadelphia public schools (25) reported in 1955 that teachers were allowed to select free and inexpensive materials but that they were expected to do so in keeping with the policies set by the board of education.

As a materials consultant, Marcus (16) used a materials committee which established policy and carried on a continuous evaluation of the entire materials program so that the work of selecting and maintaining materials for the high school was done according to broad policies established by the committee. One of the most explicit published statements of policy relative to selection of free materials, reported by Patterson (24), was that of the San Jose Unified School District, which approved the use of such aids within specific limitations, established procedures for evaluation thru representative committees, and set forth tangible criteria to be applied in such selection.

Improvement of Free and Inexpensive Materials

There are at least two approaches to the problem of improving free and inexpensive materials now being used in the schools. The first of these has to do with the criteria established for the evaluation or selection of materials; the second, with the suggestions teachers and educators make for improvement of materials when they have such an opportunity.

Standards for Evaluating Materials

Stark (29) in her early study established criteria of reliability of information, timeliness of information, background of those preparing the information, and format. These standards are still valid and represent goals toward which industry is still working, as revealed in the studies by Nelson (21), Sinclair (27), and Wayne University (33).

Netzer (22), Sinclair (27), and Stark (29) all indicated teachers' concern that materials be developed with vocabulary appropriate to the

group for which the materials are designed. Sinclair reported that educators prefer materials prepared for specific grade levels. Netzer supported this when she reported that Wisconsin teachers do not use free materials unless they are suited to the units being taught. This implies the necessity of business and industry's becoming acquainted with areas frequently studied at various grade levels.

Wayne University (33) reported that teachers liked the fact that charts were correlated with the reading material and were sufficiently large to use with an entire group. They suggested more color and fewer small pictures.

Hillis (9) reported the following criteria suggested by workers developing materials for the Sloan Foundation studies in Florida, Kentucky, and Vermont: (a) the informational content should be related to the experience of the pupil; (b) the pupil should be conscious of a need for the information which the material offers; (c) the information should be adequate for use by the pupil; (d) the material should be well organized; (e) the style of writing should be clear and comprehensible; (f) the vocabulary should be suited to the age and grade level of the pupil and to the subjectmatter of the text; (g) technical terms or unfamiliar words necessary to the content should be explained as they are introduced; (h) useful study helps should accompany the text; and (i) the following interest factors should be present: people, story form, action, humor, and life-like situations.

Netzer (22) reported that Wisconsin teachers look for materials of a graphic and pictorial nature employing a wide use of color and having a wide variety of suggested activities, provision for individual differences, lists of topics for discussion, cross references, and other features that will stimulate pupil interest. Practically all the teachers in Grades VII, VIII, and IX suggested that comic-strip type of teaching aids are desirable.

Many lists of criteria recognize the problem of advertising in free and inexpensive materials being used in schools. It is generally recommended that such advertising be kept to a minimum. As reported by the National Association of Secondary-School Principals (18), representatives of business and education agreed that for materials to be usable in classrooms there should be an absence of sales promotion. They emphasized that commercial supplementary teaching materials must not contain direct promotion of sales and that the name of the donating firm should appear but not with such emphasis or repetition as to subordinate the educational content. They thought it permissible for the donor to list unobtrusively his important products or services but said there should be no boastful claims for them, no efforts to persuade, and no urges to buy or to try.

Suggestions for Improving Materials

Investigation shows that both educators and business people are interested in developing standards and ways of working for the improvement of the free and inexpensive materials being furnished to the schools.

Wayne University's research (33) revealed that teachers liked good use of statistics in materials and disliked materials which did not distinguish among facts, assumptions, and opinions. These teachers suggested that the materials prepared by the Automobile Manufacturers Association which tended to mirror older types of teaching should be revised to reflect newer teaching methods.

The problem teachers meet in not finding materials suitable to the reading level of children in a grade where a particular topic is frequently taught was reflected in the suggestion of the American Petroleum Institute (1) that materials from the petroleum industry be geared to high-school level. Wayne University research workers (33) recommended that there be a study of texts and courses of study so that the automobile manufacturers would know for what grade level and areas their materials might best be developed. They also recommended that materials be developed to do a specific job at a specific grade level. Sinclair (27) reported that most educators, particularly school administrators, feel that sponsored aids need to be more closely correlated with classroom needs, methodology, and aims, and that school administrators appeared to agree that materials which are not correlated with existing courses of study are simply "extras" and of little value. Teachers who desire "integrated" packets of materials are voicing the same hope.

Nelson (21) in his study of how industry might prepare more effective materials for orientation and training of people who serve as educational resources in the classroom found problems in the differences in meanings attributed by business and education to such words as *resource, cooperate,* and *problem.* Businessmen who are teachers for an hour seemed to need a short, concise presentation of how to teach and relate their special area of competency to the topic under discussion with the pupils. Nelson also reported that, in preparing materials for such use, it is best to confine one idea to a single page or to two facing pages, to write material in nontechnical language, to include illustrations as an integral part of the presentation, and to design a summary to precede the discussion of a point.

Business and industry have hoped they were utilizing effective means of distributing materials to schools. Teachers have hoped for easier ways of securing materials. Sinclair (27) reported the suggestion of educators that colleges, radio stations, newspapers, and special representatives of business be entitled to participate in disseminating information concerning free materials available to schools. This might assist those teachers who do not know about available materials to become acquainted with them. Netzer (22) found Wisconsin teachers not wanting a wholesale distribution of materials, but rather a distribution only to those who genuinely wanted them. This, they thought, would guarantee to those using the materials a sufficient number for all students. They regretted the long time lapse between ordering material and receiving it and suggested that first-class mail be used rather than parcel post. Sinclair (27) found several educators reporting that the coupon section in magazines like *Instructor*

was an effective way of bringing educational materials to the attention of teachers.

There is little doubt that free and inexpensive materials furnished to schools will better meet the needs of educators so far as those preparing materials make provision for planning them cooperatively with educators.

Efforts by Business and Industry To Improve Materials

Providing opportunity for publication of research studies dealing with the use and evaluation of free and inexpensive materials has been one very important step taken by business and industry to acquaint their colleagues, as well as school people, with the research findings relative to free and inexpensive materials. Examples are the publication of the studies by Nelson (20), Sinclair (28), and Stark (30).

The authors of this chapter wrote letters to 300 trade associations, institutes, and large business firms whose materials are listed in Horkheimer's *Elementary Teachers Guide to Free and Inexpensive Materials* (10), asking for reports of any research done on their materials with respect to such items as grade placement, reading level, extent of use, and methods of preparation. In addition to the reports by Nelson and Sinclair, the report for the petroleum industry (1), and the Wayne University study (33), the authors received a copy of Howard's *Things Have Happened* (11), which is a report of materials and their use sponsored by the Southern Kraft Division of the International Paper Company. Almost 95 percent of the organizations reported, either by letter or by telephone, on their ways of working with educators to improve materials. Many of these firms stated that they test materials in classrooms, and many of them claimed to receive consultative assistance from educators in the preparation and evaluation of their teaching materials.

That business and industry are striving to provide schools with educationally sound sponsored materials is further indicated by Sinclair's report (27) that 20 of the 88 sponsors contacted in his study developed school service divisions in their public relations departments. This has apparently been done for two purposes: first, to avoid the suspicion with which materials prepared in a company's advertising department tend to be regarded by school people; and second, to develop improved materials by centering their production in a department concerned with public service rather than with sales promotion. It seems that many industrial and business groups are making a sincere effort to cooperate with educators in the improvement of free and inexpensive materials.

Conclusion

It is evident that free and inexpensive materials are widely used in schools, that they provide students with important information not found in other materials, and that they often provide teachers with valuable assistance in enriching the educational opportunities for groups as well

as for individual children. The research also reveals that there has been apprehension on the part of educators concerning the quality and adequacy of many of the free and inexpensive materials.

This review suggests the need for continued research in the preparation and use of free and inexpensive materials in the schools. Many of the studies reported here are pioneer efforts in the area. The existing research is rather fragmentary and disparate and does not enable one to obtain a complete picture of the problem.

The authors strongly suggest that research workers in colleges and universities, on the one hand, and in business and industry, on the other, cooperate in developing comprehensive studies on all phases of the preparation and subsequent use of free and inexpensive materials in the schools. If a planned program of research on the several aspects of the development and use of materials were to be inaugurated, we might expect to have many aspects of the problem studied in an integrated way in several selected settings. Data from these studies would then provide both education and industry with basic information for improved preparation and use of materials.

A second area of endeavor suggested by this study concerns teacher education. It is evident that teachers need help at both the preservice and inservice levels in discovering and using free and inexpensive materials. Beginning teachers should certainly have been sensitized to the importance of using a great variety of teaching materials and should have acquired skill in using these materials in their many forms. Teachers need to know and have experience in using the many resource aids in this area such as the film guides and the annotated lists of materials published regularly in the professional periodicals of the various teaching fields. Well-trained teachers should be expected to be accustomed users of such sources as Field Enterprises' *Sources of Free and Inexpensive Educational Materials* (5), Horkheimer's *Elementary Teachers Guide to Free and Inexpensive Materials* (10), and Williams' "Sources of Teaching Materials" (34), as well as the many other lists that have been developed such as the Citizenship Education Project's *Resources for Citizenship* (32).

Furthermore, we cannot hope to provide in preservice programs all the education necessary to discover and utilize effectively the increasing wealth of instructional materials. A strong and continuous program of inservice training and assistance for teachers is indicated. A check sheet such as that suggested by DeBernardis and Brown (4) might be helpful in sensitizing instructional leaders to some of the areas in which teachers need and wish to develop understandings.

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CHAPTER V

Resource Centers

WILLIAM H. BRISTOW and LEONARD SIMON

ACCORDING to the *Dictionary of Education* a materials bureau is a center established within a school system where curriculum materials, visual aids, and other concrete materials and teaching aids are on file and accessible for use by teachers, supervisors, and administrators. However, for purposes of this chapter, we shall use a definition from a report growing out of the work of the Southern States Work-Conference on Educational Problems (67) in which the center for instructional materials is regarded as not only a place for storage, classifying, indexing, accounting, and delivery, but also a professional laboratory under the direction of an educator who is not only grounded in general education but also is a specialist in the field of materials. On the basis of this concept, curriculum centers, museums, audio-visual centers, and libraries may be thought of as resource centers.

The Curriculum Laboratory as a Resource Center

A Bureau of Curriculum was founded at Teachers College, Columbia University, during the 1920's. Harap developed a similar project at Western Reserve University in 1929 and used the term *curriculum laboratory*. Drag (18), whose study in 1945 remains the most comprehensive research study in the field, reported 8 percent of the counties, 8.5 percent of the city school systems, 17 percent of the institutions of higher learning, and 40 percent of the state or territorial departments of education included in the survey as having curriculum laboratories. His study showed an increased rate of growth of curriculum laboratories since the 1920's and particularly during the 1940's. Most of the curriculum laboratories in existence in the 1920's (18 of a total of 26) were to be found in institutions of higher learning.

New curriculum centers are being established in cities thruout the country. In 1950 the board of education of New York City established a central curriculum laboratory for the city. At the present time 25 local curriculum centers are in operation thruout the city. To enlist the participation of teachers in the program of curriculum development, curriculum assistants work both in the central laboratory and in the local curriculum center. These curriculum assistants spend much of their time in many phases of coordination, teacher education, public relations, and providing laboratory services.

Norberg (54) reported the development of a materials center for public schools of the Mobile, Alabama, city and county. Farrar (22) described the instructional materials center of the schools of Alice, Texas, of which

the curriculum laboratory is only one part. Jennings (40) reported that the curriculum center in Kalamazoo, Michigan, started as a small library. Goetz (34) described a newly organized Educational Material Laboratory in the U. S. Office of Education which has a collection of representative textbooks used in elementary and secondary schools, professional books for teachers, reference materials, and teaching aids.

Functions and Resources

In his 1945 study Drag (18) pointed out that the development of curriculum laboratories during the previous 20 years had been an evolutionary one, paralleling the curriculum movement thru its several stages from systemwide preparation of courses of study by select curriculum committees to the recent trend toward curriculum improvement by means of teacher workshops. He listed almost 150 activities engaged in by curriculum laboratories and classified the principal functions of a curriculum laboratory under the following headings: (a) it serves as a laboratory where curriculum planning is engaged in by individuals and groups under professional leadership, (b) it serves as a division or department for directing curriculum development, and (c) it serves as a storeroom for curriculum materials and as a dispersal center for materials to be used by groups in other localities.

The University of Connecticut's curriculum center (66) studied the resources of curriculum laboratories in 73 colleges and universities, city schools, county schools, and state departments of education. The types of material in the laboratories in order of frequency were found to be: courses of study; textbooks; general bulletins; professional books; workbooks; sample texts; reference materials; bibliographies; maps, charts, and audio-visual aids; trade books; and manipulative devices. This led to the conclusion that curriculum laboratories need more emphasis on the word *laboratories* and that they are too often looked upon as libraries rather than as places of "labor."

Teacher Education

Institutions of higher learning are giving attention to the education of teachers in the use of curriculum centers. Fox and Linley (28) reported an experiment planned in cooperation with the San Diego State College and the San Diego County Schools' curriculum laboratory. Teachers learned to use the laboratory in attempting to solve curriculum problems. Materials and services, such as libraries, workshops, conference room, and a staff of consultants to assist teachers, were provided. Yuhas (69) described the curriculum laboratory in the university as an essential for teacher development. Grambs (35) described the development of a teaching materials workshop at Stanford University. Alexander and others (2) reported their efforts at curriculum improvement thru curriculum seminars at the University of Tennessee and the University of Miami. Passow and

others (56) reported an experiment by the Horace Mann–Lincoln Experimental School to provide necessary leadership training for curriculum undertakings. The curriculum laboratory of the George Peabody College for Teachers (30) reported extensive use of facilities during the summer months.

The Museum as a Resource Center

Ramsey (57) gave a history of museums in the United States, the first of which was founded as early as 1773. However, it was not until about a hundred years later that public and semipublic museums were founded. That education was considered a primary function of the museum can be seen in the early contracts, acts incorporating museums, and statements and reports. The Buffalo Society of Natural Science in 1876 was the first to inaugurate educational work for the benefit of the public. In Davenport, Iowa, teachers brought classes to the Davenport Academy of Natural Science as early as 1877. Low (47) found that much of the expansion of educational activities in the museums came between 1900 and 1930 when museum emphasis was shifted from a privileged few to the general public. Museums tended to follow a variety of approaches to their educational work depending upon their philosophy of museum work. Altho most of the museums studied had educational departments, one museum had no educational department because of the belief that education represents the total function of the museum and that to establish a special department would be a denial of this belief. Moore (50) gathered information in 1941 concerning 100 museums and their work with children. She found school museums controlled by boards of education, school museums controlled by individual schools, children's museums controlled by their own boards, and children's museums as separate but distinct parts of adult museums.

The place of the museum in education was critically examined at the UNESCO International Seminar on the Role of the Museum in Education (26). The purpose was to survey the training of museum staffs or school teachers for different types of service, and to discuss the provision of museum equipment from the simplest display method to the use of television. In one of the papers Godwin (33) pointed out that education carried on in the museum demonstrates that the museum itself is a visual aid tho it is not always recognized as such. She reported that the Buffalo Museum of Science was one of the first to arrange its exhibits with an educational purpose. In addition to its other educational work, this museum developed a summer camp with such activities as nature study, arts and crafts, camp crafts, singing, games, Indian lore, and dancing. She also reported that the Academy of Natural Sciences of Philadelphia had a recent educational exhibit on water conservation, a feature of which was the cooperation and sponsorship by the Pennsylvania Department of Forest and Water, the U. S. Geological Survey, the Pennsylvania Sanitary Water Board, the Pennsylvania Game Commission, and the City

Planning Commission of Philadelphia. Eckhardt (19) concluded that in America the school visits to a museum are usually in connection with the current syllabus. He reported that school visits to Baltimore museums during 1951 consisted of art classes (12 percent), miscellaneous high-school groups (14 percent), combined language classes (19 percent), and history classes (55 percent). Thompson (61) reported a discussion of the place of the museum in the training of the handicapped and the recognition of the value of this training.

Hiller (37) examined the educational program of 26 museums and found examples of close cooperation between museums and boards of education in several instances. For example, at the Brooklyn Museum an assistant superintendent of schools works directly with the museum's curator of education in the administration of teacher-education classes. In Philadelphia the board of education and the museum cooperate in the presentation of museum field days. In Cleveland and in St. Louis teachers paid by the board of education serve on the staff of the museums to help carry on the program for school children. Hiller also reported that museum loans of original objects and reproductions are made to schools in Boston, Cincinnati, Cleveland, Newark, St. Louis, and New York.

Doyle (17) studied the publications of 378 museums and found that 106 museums published technical material, 97 published popular material, 12 published periodicals, and 52 published newsletters. These publications are intended for exchange with other institutions and to inform members of the museums. Sale of these publications to visitors, schools, and others is the practice of 101 museums.

The American Art Directory of the American Federation of Arts, edited by Gilbert (32), lists the activities of the institutions which are members. A sample of these activities shows their implication for school systems. The City Art Museum of St. Louis offers story hours for children, talks in schools, original objects lent free to high schools, and color reproductions lent to elementary schools. On the university level, the Yale University Art Gallery offers free public lectures and lectures to schools on appointment. The Marine Historical Association at Mystic, Connecticut, offers guided tours for school groups. The museums are attempting to make their exhibits accessible to as many people as possible. Virginia, as one example, is experimenting with a traveling museum of art (13). The art exhibit is accompanied by educational materials which include filmstrips, informative panels, and recorded commentary.

Ramsey (57) reported early attempts to subject the educational work of the museums to scientific investigation, beginning about 1925. Low (47) reported that, in general, many of the activities in the museums are variations of past procedures and practices and that no attempt is made within the museums, other than on an informal basis, to discover the effectiveness of the program.

The Audio-Visual Laboratory as a Resource Center

Kelly (41) reported a comprehensive study of audio-visual activities on the state level. He found that of the 46 state departments reporting, 19 have a separate audio-visual unit, bureau, or department. When the eight states in which the audio-visual work is delegated to other units are included, the total is 27 states. Seventeen states have audio-visual services at the state university. In 1952, the U. S. Office of Education (63) listed 38 states and territories as having individuals in charge of audio-visual education. Caldwell (11) reported that Arizona, Arkansas, Georgia, Indiana, Louisiana, Ohio, Oklahoma, and Virginia make specific appropriations for the audio-visual program in the state in addition to the funds raised in the individual school systems. Allen and Malter (3) reported that only five states made no specific provision in terms of personnel time allotments at the state level for audio-visual instruction. The *See and Hear* mid-century survey report (60) indicated wide variations in the audio-visual services of the states reporting.

Ormsby (55) reported that Washington and Oregon have centers in the university and state colleges from which audio-visual material can be rented. In California each county serves its own schools unless there are large cities within the county. The building coordinator in the county is an important element in the extension of the program. Finn (25) described a few audio-visual centers in the Rocky Mountain region. Montana has a small state film library. Colorado and Wyoming have developed libraries in the state universities. The county library movement in the Rocky Mountain region receives tax support, and the county librarian is the key person. Projects, films, filmstrips, records, and in some cases study prints are put in a bookmobile and taken out for use in outlying communities.

Saettler (59), reporting a historical study of audio-visual education in city school systems, found that the school museums emerged first as audio-visual centers of the schools. The St. Louis Educational Museum, founded in 1904, became the first administrative unit for audio-visual education organized in a public school system. In 1923 only 16 city school systems had organized departments of visual education. In 1953-54 a survey conducted by the NEA Research Division (52) found that, of the 1310 urban school districts replying to a questionnaire, 27 percent had a department of audio-visual education and 51 percent reported central coordination of the program but no formal audio-visual department. This same survey also reported that 65 percent of the school districts in the survey had audio-visual centers and about 25 percent had no audio-visual facilities of any type.

A Connecticut State Department of Education survey (14) found that more than a quarter of the reporting schools had staff assigned to audio-visual services. More than half of the principals in school systems having no central audio-visual department said the establishment of such a

department was desirable. The Georgia State Department of Education (31) reported a trend toward school systems providing centralized audio-visual service and the use of portions of state textbook and library funds for audio-visual materials.

Services and Facilities

Harris (36) in a study involving 5000 teachers in adult-education programs in California reported that 30 percent of the audio-visual materials they used came from outside sources and only 10 percent came from audio-visual centers. It was pointed out that the regular day-school teacher who can plan six to eight weeks in advance can make greater use of the audio-visual center since this amount of time often is necessary for obtaining material from such centers. Harris found that the only audio-visual materials obtained to any great extent from the audio-visual centers were films, slides, and filmstrips. Dale, Finn, and Hoban (15) reported surveys that revealed growth in all phases of audio-visual service.

The survey of the NEA Research Division (52) contained a checklist of the types of audio-visual service available in urban school districts. The five highest ranking services according to the 1301 replies were: obtaining free and rental materials on request, consulting with individual classroom teachers on using audio-visual materials, keeping classroom teachers informed of available materials and new acquisitions, selecting and purchasing audio-visual materials, and providing operators and equipment for school use. Keeping classroom teachers informed of available materials and new acquisitions was the only service ranking among the five highest regardless of whether the results were tabulated by type of organization or by size of district. More than 100 of the districts reported being engaged in producing educational programs for commercial TV stations; however, only five districts reported a school-operated television station. The survey also presented data concerning the audio-visual equipment and materials available. A larger percent of elementary- than of secondary-school teachers use audio-visual materials. Secondary-school teachers make the most effective use of audio-visual aids in science and social studies and the least effective use in mathematics, English, and foreign language.

Teacher Education

Kelly (41) listed four states that require course credits in audio-visual education as a requirement for a teaching license. He also reported that 29 states sponsor audio-visual instruction workshops for teachers, 20 sponsor institutes, 12 sponsor summer session courses, and 11 sponsor extension courses. *Educational Screen* (20) listed 250 institutions thruout the country offering summer courses and workshops in audio-visual methods and material. In 1953 Darden (16) reported a study of 20 selected county audio-visual centers in California. He found that training in the use of audio-visual equipment and materials took place in institutes,

workshops, college extension courses, interschool visitation, faculty meetings, and by handbooks. Harris (36) reported that more than half the 5000 teachers responding to his questionnaire expressed a desire for a course in audio-visual technics. Geer (29) concluded that, altho teachers are encouraged to use audio-visual materials, they lack training and experience. Leeland (43) in his study showed the need for audio-visual inservice programs. The NEA Research Division survey (52) reported that some formal training and/or practical experience in using audio-visual aids was required in only eight percent of the districts reporting. It was also reported that inservice education in audio-visual education was available in approximately half the districts.

Advance training in the audio-visual field is available at only a few institutions. Brown and Lyda (10) reported only four doctoral studies in audio-visual education completed during the year 1949-50. Hunt (38) pointed out that 27 such dissertations concerned with audio-visual services were under way in 1951-52. Twelve of the 27 studies were being conducted at Indiana University and at Columbia University.

The Library as a Resource Center

School libraries have developed along various organizational lines. District school libraries first appeared in the 1830's and 1840's. Altho 19 states had enacted legislation of sorts affecting public school libraries by 1876, the school library movement did not gain momentum until much later. Cecil and Heaps (12) gave 1876 as the date which saw cooperation between public libraries and school libraries beginning to lead to the establishment of library facilities in schools. They reported that by 1940, 30 states had permissive and 15 states mandatory legislation relative to the establishment of school libraries. Altho 17 states made legal provision for state aid to libraries, in only six of the states was the legislation mandatory. Batchelder (6) reported that the first school library, with a librarian in charge, dates from the beginning of the twentieth century, with an increased rate of growth in the number of school libraries not becoming evident until the 1920's and 1930's.

The U. S. Office of Education (65) reported that more than 9 in every 10 high schools responding to a questionnaire were served by centralized libraries. Fewer than 1 in 2 of the elementary schools in cities of over 100,000 population and fewer than 1 in 6 of the elementary schools under county superintendents had central libraries. However, only approximately 1 in 5 centralized libraries in cities of more than 10,000 population and approximately 1 in 33 centralized libraries in the county systems reported a book stock of 5000 volumes or more.

Anderson (5) reported an increase in the number of school library supervisors in the state departments of education, with more than half the states employing such supervisors. She also reported evidence of growth of school libraries. For example, Baltimore has organized 23 elementary-

school libraries since 1947. In 1951, the Jackson, Tennessee, schools set up central libraries in four elementary schools. Fedder (23) reported a number of library studies showing an uneven development of school libraries thruout the country.

Public libraries are important factors in servicing the school. Brahm (9) described the growth of public libraries from the community and association libraries of the nineteenth century; of the county libraries, particularly in the 1930-1950 period; and of the multi-county and regional libraries of the past few years. LeFevre (44) described how the school-district library formed the nucleus of the town library, out of which the public library movement grew, rather than the modern school library. The U. S. Office of Education (64) reported more than 7000 public library systems in this country in 1944-45. However, more than 40 percent of these libraries owned fewer than 6000 volumes and another 40 percent had from 6000 to 25,000 volumes. The picture of the public libraries serving the public is as spotty as the picture of the school libraries serving the children. Beals (7) in 1943 pointed out that some sort of library service was available to the entire populations of Massachusetts and Rhode Island whereas only 12 percent of the population of West Virginia had public library service. Rose (58) in 1954 reported that 71 percent of the people of North Dakota were without access to any library service. A New York State Governor's Committee on Library Aid (48) reported that in New York State in 1950 more than a million people had no public library legally open to them, a third of a million had only token service, and half a million had service a few hours a week.

Educational Activities

Batchelder (6) said that two major factors in the growth of the public school libraries were the broader con. pt of education and the cooperation of public libraries with schools. ose (58) reported that public libraries in Cleveland, Worcester, Providence, Buffalo, Detroit, Milwaukee, and New York were sending book collections to schools even before 1900. Many public libraries, as part of their program, offer special facilities and programs for children and youth. The Committee on Post-War Planning of the American Library Association (4) described library work already being done along this line. Libraries in such cities as New York, Cleveland, Pittsburgh, Milwaukee, and Newark have special rooms for teen-agers and children. Experiments on "great books" programs, forum meetings, social gatherings, film forums, and other activities are now being carried on within the public library. Ersted (21) described four states in which the state supervisor of school libraries also devotes time to work for children and young people in public libraries. Children's librarians in two state departments of education give time to work with school libraries. She reported that in some states the responsibility for public library development is in the state department of education. She also described cooperative library administration in Cleveland, Cleveland

Heights, and Lakewood, Ohio; Madison, Wisconsin; and a number of other cities. County library branches are placed in school buildings in many rural areas, and schools are often regular stops for bookmobiles. The NEA and the American Library Association (53) described public and school library relationships in 10 communities which illustrate a variety of patterns of organization.

Leigh (45) reported a study of the Social Science Research Council which found that one-fourth of the books read by people are from public libraries. Estimates indicate that one-third of the children use the library, compared with one-tenth of the adults. The study also indicated that small libraries select their current books on the basis of sale volume. Two-thirds of the public libraries in the United States serve populations of less than 5000; these in general make no serious attempt to build collections of popular but reliable reference works in major areas. Film and musical materials are limited mostly to the small percent of public libraries with a budget of over $100,000.

Fenwick (24) described an informal experiment of library service to younger children at the Laboratory School of the University of Chicago. The experiment, it was felt, showed that the elementary-school library can be an important and effective tool in the total educational program. The Thirtieth Yearbook of the Department of Elementary School Principals (51) contained reports of practices of individual teachers and school systems in utilizing the resources and services of the library. Kennedy (42) described library situations and functions in several localities that show different organizations on the elementary level. Witmer (68) described the librarian at work in five different localities and concluded that libraries are active teaching and learning centers. James (39) reported that until about 1930 the two main functions of the high-school librarian were to order books and to teach the use of library tools. By 1940, articles began to appear in professional journals describing how the library could play a part in the training of youth in critical thinking and could aid youth to make independent judgments based upon reliable information. Today, the high-school library also serves the teacher and the administrator.

Relationship to Audio-Visual Program

The search for a relationship between the library and the audio-visual program continues. Many administrators and school librarians would prefer that the library deal with printed materials and that audio-visual materials be cared for by other departments. Bennett (8), in citing the results of a survey undertaken by the Association of College and Research Libraries, mentioned this difference of opinion among librarians as to who should administer the audio-visual service. Similarly, Ainsworth (1), reporting a state survey in Illinois, found that librarians disagreed as to the place of the librarian in the audio-visual program.

The U. S. Office of Education (62), reporting school library standards in 1954, pointed out that in some states audio-visual materials are part

of the library organization. The Indiana School Librarians Association (49) described the growth of the school library into an instructional center, culminating in the establishment of a division of school libraries and teaching materials within the state department of public instruction in Indiana. Florida issued a similar statement (27).

Lieberman (46) surveyed 61 library schools with full-time programs in the United States and found that 95 percent of these institutions do offer audio-visual instruction in their curriculum. However, in rating the catalog offerings of these schools, he found them to be generally poor.

Needs and Trends

Various types of resource centers were originally thought of more as repositories of materials than as workshops and places of learning. Resource centers were also more concerned with materials for pupils than for teachers. The workshop movement has highlighted the importance of teachers using the resources of museums, libraries, and curriculum and audio-visual laboratories. Today, resource centers serve both pupils and teachers.

Altho the integration of various types of resource centers was early recognized as educationally desirable, this has not been achieved. The interrelationship of centers providing various types of materials is now being examined in the light of total curriculum, staff, and pupil personnel needs. As an example, the relationship between libraries and audio-visual centers is under scrutiny and study in a number of communities. The relationship of public and school libraries has not been completely and adequately worked out. The relationship between systemwide and school centers of materials is also a problem. Further studies are needed with respect to the extent to which various services can be integrated without losing the unique contribution which each makes.

Research concerning resource centers has been mainly of the survey type, and little has been done to evaluate the movement critically and point out its place in the educational structure. Research is needed as to the function, relationship, uses, and value of centers offering different kinds of services. Research is also needed as to the design, location, facilities, and services which are offered both to pupils and to teachers. The place of resource centers in inservice training has been increasingly recognized, but no clear design or pattern has emerged.

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